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American Medicine

GEORGE M. GOULD, *Editor*

G. C. C. HOWARD, *Managing Editor*

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American Medicine

GEORGE M. GOULD, *Editor*. G. C. C. HOWARD, *Managing Editor*.

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The New Series of American Medicine is inaugurated with the present number. Retaining all the professional, scientific, and literary standards it has always possessed in common with the high-priced medical journals, and offered at the price of one dollar a year, it creates a new field and meets a popular demand. Its patrons will find no abatement of its independence, and no lowering of the tone of its contributions. A number of new departments are in course of preparation, several entirely new in medical journalism; especial effort will be made to attain the highest degree of concentration possible with general excellence.

The recognition accorded the movement even before the presentation of this first number is most gratifying, showing the existence of an *esprit de corps* in the profession sufficiently strong to give its independent professionally owned and controlled journals the widest circulation in the country. There is cause for general congratulation in this, since the development of professional solidarity signifies higher ethicality. So far as *American Medicine* shows the spread of professional feeling it deserves support; and, from that standpoint, those connected with it will work for its success as willingly as they will cease from their labors should ever a time come when there no longer is a work for it to do.

An amusing tirade against the medical profession in general, the American Medical Association in particular, and the Journal of the Association in every particular, appears in a recent issue of the *National Druggist*. This is bad business all around and we hope that it will cease. No good can come of vilification, especially of those to whom we appeal for trade. It is atrocious to place a sordid interpretation upon a movement designed to protect sick people, and abominable to disrupt the cordial relations which should exist between medicine and pharmacy. Each profession wants the assistance of the other and will fail without it. The *National Druggist* can be an aid if it wishes—unless its policy is to usurp the duties of the physician and join the quacks, who depend upon the sale of more or less worthless things and do not depend upon the efforts to cure. It is regretable that trade considerations enter the matter, although it was to be expected in view of the millions of capital invested in exploiting the sale of drugs whether useful or not.

Prostitution, venereal diseases, and alcohol will be the topics for discussion at the symposiums in the Section on Hygiene at at the next meeting of the American Medical Association. The trio is of sufficient importance to occupy the attention of every section, for Venus and Bacchus are believed to be responsible for much of every physician's work. Unfortunately we are so prone to fly to extremes that we have long blamed these evils for results of which they are really innocent. The pendulum has swung too far, and it shows symptoms of a return swing.

The present task is to check the reaction before it goes too far. Alcohol may not be the cause of many things now loaded upon it, and prostitution is a symptom of a profound sociologic fact bound up in the very existence of civilization. Yet we cannot blind ourselves to the evils of both. We trust that, in the coming discussion, emotion will be eliminated and the matters looked upon in that cold brutal fashion without which the true relationships cannot be appreciated. We hope that there will be a frank examination into the causes of prostitution and alcoholism, for then it will be possible to start right in practical measures for limiting evils which we see no early possibility of curing. A recognition of evils, or even toleration of them, is not approval. The cry of "no compromise with vice" nearly always gives vice a free rein.

The pure food crusade seems destined to degenerate into a poor feud. Every intelligent man, except the manufacturers of "fake goods," is heartily in favor of the efforts to obtain the passage of a law by means of which food, drink, or drug shall be sold under its own name. Even if a substance is perfectly harmless it is a fraud to sell it as something else—indeed it is a dangerous custom, for it opens the door to dreadful abuses. It is right and proper therefore that every package offered to the public for sale, shall plainly indicate the contents and the date of preparation. It has been charged that upon the outbreak of the Spanish war, the call for canned meats was so far beyond the capacity of the manufacturers, that goods many years old were gathered together from all sources and dumped upon the army. There are no experiments which prove positively that such foods deteriorate to a marked degree with moderate age, yet no one wants to feed upon such senile proteids. The alcohol shipped to Europe in such enormous quantities and brought back as wine or brandy is no more harmful under its new label than the old one, but those who want to indulge are only swindled by the lawlessness of the business. The whole trade is such a mass of misrepresentation as to be an atrocious scandal and the sooner it is corrected the better. It is therefore a double pity that the reform should be jeopardized by assertions of dangers which do not exist.

The alleged dangers of boric acid and similar food-preservatives have been created to support a cause amply able to stand on its own sturdy legs. We have called attention to the unfortunate public apprehension that creasote on hams is worse if applied by hand than if applied by smoke. A similar dread is created by the crusade against other preservatives which are more or less necessary in modern life. Of course no one wants to be dosed with huge quantities of chemicals, but the allegation that the minute quantities used are harmful has had the expected result of eliciting denials from men whose opinion deserves respectful consideration. The experiments of the Department of Chemistry with a poison-squad of volunteers have been published in reports so voluminous that no one has had time or courage to analyze them. It comes as a distinct shock then to learn that there is not the slightest justification for the widely advertised conclusion that they proved to have been injurious. In an article in the *Chemiker Zeitung* for January 10, 1906, Dr. L. Spiegel summarized the conclusions of Professor Oscar Liebreich who has most laboriously studied the data. Not only did the latter find that the experiments were wholly inconclusive, but also that some deductions were made in opposition to the facts. In regard to the excretion of phosphorus, he concludes that if the figures are correct, boric acid has actually prevented undue excretion instead of wasting it. He concludes that the injuriousness of boron compounds in the small quantities used as food preservatives, is not proved. Coming from German sources which are so notoriously prejudiced against American foods, this conclusion can not well be ignored.

Food Experiments are Proverbially Deceptive. In no other branch of science have such contradictory conclusions been drawn from identical data. While Prof. Chittenden of Yale is proving that we eat too much nitrogen, certain Germans are frantic because we take too little. In the hands of some men, alcohol shows itself to be a valuable food, while another camp proclaims from the housetops that it is worse than sawdust—a positive poison even in drop doses. While Dr. Wiley, the chemist, advised men in the tropics to leave meat alone and subsist mostly on fruits, many of the tropical experts declare that such a course results in fatal nitrogen-exhaustion. While Harrington, a Boston expert, advises cutting down the meat-ration of soldiers in the tropics, the British were compelled to increase it in India. Washington experts advise against the use of fats in hot countries, but we find that such foods are demanded and consumed in large quantities. And now to cap the climax, food preservatives decided to be very harmful may prove to be slightly beneficial. In the interests of pure food, and drinks, and drugs, sold under their own names, we hope that in all future experiments the data will never be used to support a theory formed in advance.

The opium habit among the Chinese in the Philippines has been giving the authorities much trouble. In 1903 the commission attempted some legislation on the subject, but encountered such vigorous opposition from the clergy and the Chinese that the matter was temporarily laid aside. The clergy were horrified at any governmental recognition of the opium traffic, while the Chinese violently opposed any interference with a custom which they considered harmless and necessary. The two combined forces and their tempestuous opposition was wonderfully like the curious alliance of our temperance workers and the whisky dealers, to stop the sale of beer in the army canteens. To gain time to think, the commission appointed a board to investigate the matter, and this board, consisting of a clergyman, a doctor and a Filipino, not knowing anything of the matter at all, travelled extensively over the Orient from Japan to Java, for several months at government expense, to look up facts which have been matters of common knowledge for many years. After several more months they made some unanimous recommendations which were said to have been promptly and properly pigeonholed. A copy of their report was obtained by the Anti-Opium League in China, and a first edition of ten thousand copies, printed at the North-China Herald office in Shanghai, is being energetically distributed over the world—with funds reported to be supplied from sources more related to sentiment than science.

The dangers of opium in the Orient have been exaggerated by the missionaries who presumably know too little about the matter. The British Commission which investigated the use of opium some years ago concluded that the drug was not specially harmful to Mongolian races and that seems to be the general trend of professional opinion on the subject. It has become a habit with missionaries to relate almost everything evil east of the Suez to the use of opium, and this tone seems to permeate the report alluded to. The Chinese, in spite of the opium, are of the most vigorous, progressive and energetic elements of all that part of the tropic world. There seems to be a dread that they may corrupt the Filipino, but as they have been unsuccessfully teaching him the habit for some centuries it is not understood why we should suddenly get overexcited concerning a danger which has never materialized to any serious degree. The board states that smuggling now prevails and would probably increase if the tariff or vendors' license were raised, yet it recommends an immediate government monopoly under salaried officials with prohibition in three years.

How prohibition is to stop the smuggling is not seen, for the wily Chinese are a match for the authorities in all underhand affairs. Though the board seems to be of the opinion that the oriental users of the drug are never cured, yet it recommends efforts to cure them, and if they are not cured in three years they shall be deported—not a small matter with 70,000 Chinese upon whom the trade and many industries and indeed much of the prosperity of the Islands depend. In the meantime users of the drug who are presumed to be quite numerous are to be given a license to smoke it, while inducing them to give it up and punishing them eventually if they don't. We must expect many paradoxes to come from the Philippines, but to Americans who have never been in the Islands this report is the most curious thing which has yet come home to us. It seems that it would have been the part of wisdom not to have taken up the matter at all. The time, money, and energy, all scarce in the Philippines anyhow, could better have been devoted to other objects.

School boys do not sleep enough is the conclusion of some English physicians. The matter has been under discussion in the lay press of London, with a view of directing popular attention to the harm now done in some of the boarding schools. *The Hospital* of January 27, declares that neither physicians nor teachers seem to realize the seriousness of the situation. It is stated that at the end of a school-term the boys are so exhausted that they practically spend their vacations in sleep. Attention is called to the widespread error that change of occupation in childhood is rest—that a paper-chase or ball game relieves mental fatigue and takes the place of sleep. No one seems to realize how much sleep is need in childhood. The most pernicious things which appear in the lay press are the alleged instances of men who never sleep more than 4 to 6 hours in the 24—omitting all reference to the little naps taken during the day. It is timely therefore to call attention to the matter, should there be the same school faults in America.

The Proper Amount of Sleep. Mothers know that the newborn infant must sleep about 22 hours, and that this amount is so slowly lessened that the child still demands 12 hours when it is about 12 years old. It is quite likely that the normal amount is not reduced to ten hours until about 18 years of age or perhaps until 21 years. Nine hours may be required until well along in years. To let boys of 14 sit up until 10 o'clock and rout them out at six is nothing short of criminal, but it is a long established custom. Lower animals can be quickly killed by depriving them of sleep—the boy is not killed but perhaps he is so exhausted that he loses resistance to disease. Medical students not infrequently make the same mistake, forgetting that a tired brain never absorbs anything. The midnight oil frequently represents wasted time and money and the student sleeps during the next day's lectures when he should be wide awake. A good test of exhaustion is the tendency to sleep during a dry lecture—and this is no joke.

Sleepless Students Cannot Study. Experience has proved that those who retire in time to sleep at least nine hours and occasionally ten, get far more out of their course than the "grinds." Some of the best men habitually take ten hours. Theoreticly a student should be as fresh at the end of the term as at the beginning—the vacation is for another purpose than sleep. The whole subject—though very old—is so new to the laymen who do the damage to school boys, particularly in boarding schools, that there is urgent need of wider publicity and much discussion for, enlightenment. Not only will proper sleep permit more to be gained for less effort, but will prevent the exhaustions which so frequently follow school courses. Physicians might teach mothers that it is harmful to waken children of any age—they should waken in the morning naturally. If they are not in time for school they do not retire early enough. If they are "sleepy-heads" it is either the fault of the parent or the result of ocular defects. There is much comment upon the large number of midshipmen who fail at the Naval Academy in a course not worse than in many colleges. It is suspected that they would do better if they had ten hours sleep daily.

The disaster at San Francisco has a special bearing upon the medical profession in the fact that the offices of most of the physicians of the city were in the area devastated, and hence those from whom most efficient aid is needed are incapacitated from doing their utmost because of the loss of professional equipment. Advices to hand as we are going to press indicate that physicians are among the heaviest sufferers, and yet are spending themselves night and day in behalf of the many racked by physicial ailments as well as nervous shock. Medical supplies are being rushed to the city, but these cannot take the place of the instruments, reference libraries, and office equipments tried by personal service and found true and reliable. Throughout the country members of alumni associations are endeavto aid their colleagues, but it would seem that a more general and widespread cognizance should be taken of this matter so important in its bearing on the health of the wrecked city, and special effort made to place all physicians in a position to practice without being hampered by inaequate equipment. *American Medicine* will receive and forward any contributions which physicians may see fit to make for this purpose.

The growing organization of policy holders with paid counsel to look after their interests, is proof of the widespread feeling that the standard insurance companies have been unwise—to use the mildest term. Yet it comes as a distinct shock to learn that clergymen are to be gathered into a special class, by playing upon the small percentage of frauds in the old line companies. The saving will not be enough, probably, to make a marked difference though it will make some; yet it is enough to advertise the cheap companies and attract attention. Clergymen do live a trifle longer than the rest of us, and deserve a cheaper rate, but they get it back in dividends in the end. It is not clear then why they should be "extra preferred risks."

Law on Vaccination.—The Commonwealth failed to make out a case against the school directors near Harrisburg, Penna., for violating the vaccination law, as no criminal intent has been shown. The judge before whom the case was tried instructed the defendants that "it is the duty of every good citizen to obey the laws, no matter how obnoxious"; and confidence is expressed that there will be no further violations in that district.

CORRESPONDENCE.

[Communications are invited for this Department. The Editor is not responsible for the views advanced by any contributor.]

THE PURE FOOD BILL.

BY

H. H. LANGDON, M. D.,

of New York City.

To the Editor of American Medicine:—In your issue of March 3, is an article entitled "The Pure Food Bill." The article states that Prof. Edward Kramer claims benzoic acid and sodium benzoate (which are used to preserve pickles, preserves, and condiments) are not harmful in small quantities.

This may be so. There has been considerable controversy about the healthfulness of cranberries, which contain a small percentage of benzoic acid. Prof. Wiley claims a diet of cranberries would shorten life. This statement may be true, but I have never heard of a person dieting on cranberries. It is absolutely necessary to use some method to preserve and prevent fermentation and deterioration of food-stuffs.

Vinegar, which is used quite extensively for preserving, contains about 4 percent of acetic acid, which is a poison. The Pure Food Bill however, does not prevent its use. It is a question however, whether any of the articles that are preserved with vinegar are beneficial to the health. There is not much food-value in any of the condiments that mankind uses to tickle his palate. The health of our nation would improve if we would consume simple, nutritious food, instead of highly seasoned, indigestible articles. Our palates are so trained that simple food does not appeal to the average American.

The Pure Food Bill which compels labels on all articles of preserved food should be of great benefit to the consumer if he heeds the label. The Pure Food Bill as it is at present will prevent the use of any chemical preservative that would be absorbed by the article preserved. The bill allows the outward application of borax or boric acid on any article of food from which they can be removed mechanically, by maceration in water or otherwise.

I consider that it was a wise amendment to allow the use of these mildest of all preservatives. The danger does not lie in the preservatives, as it is foods which are not preserved that are in a condition to develop the ptomain poison. Borax or boric acid must be used on fresh articles of food. Under no circumstances should they be used to restore tainted or partially decomposed food to an edible condition.

HAND DISINFECTION.

BY

N. HAYES, M. D.,

of Seneca, Kan.

To the Editor of American Medicine.—In the issue of *American Medicine* for March 17, the article by Mr. Obendorf, suggests calling attention to the supposed efficiency of hydrochloric acid as a disinfectant for the hands. The chemically pure acid is harmless if there is no lesion of the skin, but a 10 percent solution is probably efficient. I use the undiluted "commercial" acid, after ordinary washing with soap and water and clean cloth. The use of a stiff brush previous to the acid will render the skin vulnerable unless it is smooth, soft, and free from the minutest open points, but only if the latter exist a brief stinging results. The acid should be neutralized on the hands by water with a 5 percent to 10 percent of water of ammonia added.

Various matters will penetrate the skin, as evidenced by persistent odor of the hands after various manipulations, so deeply as to defy all detergent measures and resort to strong chemicals is necessary. It is believed that in these cases, also, the acid meets the indications. In the nature of things there is a simple abundant remedy near at hand for all emergencies of antisepsis did we but know what it is. I hope the application of acid to the hands for the purpose indicated will be investigated by those having the proper facilities and an authoritative statement sent out.

PREPARATION OF MEDICATED SOUNDS IN TREATMENT OF CHRONIC URETHRITIS.

BY

EDWARD G. BALLENGER, M. D.,

of Atlanta, Ga.

To the Editor of American Medicine:—In reply to a number of inquiries as to the best method of mixing silver nitrate with cocoa-butter in preparing medicated sounds for the treatment of chronic urethritis, described in the issue of *American Medicine* March 3, I would say that a uniform distribution of silver nitrate is obtained if it is first dissolved in a small quantity of water and then added to the melted cocoa-butter. A precipitate settles to the bottom and requires shaking each time before using, but does not seem to affect, in any way, the reaction produced. Several druggists have tried to make preparations for me that would prevent this but so far all attempts have been futile, so now I shake the bottles well to diffuse the fine particles throughout the cocoa-butter and have found the results just as satisfactory as if it had remained in solution or suspended.

ORIGINAL ARTICLES.

THE ACTION OF QUININ UPON THE TERTIAN, QUARTAN AND AESTIVO-AUTUMNAL MALARIAL PLASMODIA.[1]

BY
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Introduction.—Although a considerable amount of research has been devoted to the action of quinin upon the plasmodia of the malarial fevers, and numerous investigators have reported upon the results of their work, reference to these reports reveals the fact that much confusion still exists regarding the exact effect of this drug upon the plasmodia, and, therefore, the best time for its administration in the treatment of the fevers caused by these parasites. This is well illustrated in the following quotation from Manson,[1] who, in speaking of the action of the drug says:

"In what way quinin acts has not yet been satisfactorily explained. Some, reasoning from the toxic influence this drug exerts on many kinds of free amœbæ, say that it acts in malaria in the same way—that is, as a direct poison to the parasite. They support this view by pointing to the degenerative changes, as evidenced by imperfect staining reaction, exhibited by such parasites as persist in the blood after administration of quinin has been commenced. Others maintain that it acts in stimulating the phagocytes, the natural enemies of the parasite. Some experimentalists allege, on the other hand, that it paralyzes the white corpuscles. It is said by some to be the most effective against the free spores and the very young intracorpuscular forms, but inoperative against the more mature parasites; hence they advocate giving it early in the parasitic cycle. Others, on the contrary, maintain that it is operative only on the large intracorpuscular forms, and therefore advocate its use at a late stage of the cycle."

The following study was undertaken to determine, if possible, the actual effect of quinin upon the various forms of the malarial plasmodia, and the best time for the administration of the drug as shown by its action upon the parasites. The results obtained show that quinin acts upon every stage in the growth of all the varieties of the plasmodia, but that its action is most marked upon the free spores and the young intracorpuscular forms, in the latter often not preventing entirely the development but producing very marked developmental changes.

Much of the confusion which exists regarding the action of the drug is due, I believe, to the staining methods employed by the various observers, many of which were imperfect, and to the interpretations arrived at from them. In my own work I have used a slight modification of Wright's method (see Note) which in turn is a modification of Romanowsky's. By this method the chromatin of the nucleus of the plasmodia stains a brilliant red, the protoplasm a robin's-egg blue while the vesicular portion of the nucleus remains unstained. The method is uniform in its results and in the great number of specimens examined the morphologic changes observed in the plasmodia after the administration of quinin were always the same for the various periods in the life cycle of the organisms.

The investigation was conducted at the U. S. Army Post at Camp Stotsenburg, Pampanga Province, Philippine Islands, where all the varieties of the malarial fevers were prevalent, especially in the natives living in the small barrios or villages around the Post. The conclusions arrived at are the result of the examination of a very large number of specimens of both fresh and stained blood after the administration of quinin, and represent, I believe, the exact action of quinin upon the various forms of malarial plasmodia in all stages of their cycle of development in man.

Before considering in detail the results of this study of the subject, a brief review of the investigations of other observers will be of value.

REVIEW OF THE LITERATURE.

Binz,[2] in 1867, was the first to interpret the curative action of quinin in malaria as being due to its effect directly upon the cause of the disease, which he concluded to be some lower form of animal life. In support of his position he instanced the effect of solutions of the drug upon many species of infusoria.

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[1] Published with permission of the Chief Surgeon f the Division of the Philippines, Manila, P. I.

In 1881, Laveran[3] demonstrated that a 1 to 1000 solution of quinin caused the immediate cessation of the movements of the plasmodia when added to a preparation of malarial blood under the microscope and asserted that "it is because it destroys the parasite that quinin causes the disappearance of the manifestations of paludism." The conclusions of Binz and Laveran were confirmed by numerous observers, notably Golgi, Mannaberg, Marchiafava and Bignami, Antolisei, and Romanowsky, studying both fresh and stained specimens of blood after the administration of quinin.

Action upon the Tertian Plasmodium.—Golgi[4] claimed that the action of quinin was most marked upon the tertian plasmodium, even the adult forms being affected by it. His studies were made upon fresh blood and the changes produced by the drug, as described by him, consisted in a shrinkage of the parasites, while the protoplasm became coarsely granular and opaque. The segmenting parasites were shrunken and contained numerous pigment masses and a smaller number of spores.

Romanowsky[5] studying the effects of quinin in specimens stained by his admirable staining method found that in the young intracellular tertian parasites, the drug causes a disappearance of the unstained area surrounding the nuclear chromatin (the vesicular portion of the nucleus) while the latter stains less intensely. The adult parasites showed more marked changes, becoming round in shape while the pigment was distributed throughout the organisms or else collected about the periphery; the protoplasm stained uniformly; the chromatin was reduced in amount, stained less intensely and the unstained area had disappeared. He found that in the sporulating bodies the segments stained uniformly, the nucleus slightly, while the unstained area was absent.

Mannaberg[6] studied both fresh and stained specimens. In the former he found that ameboid motion became lessened and that several hours after the administration of the drug fragmentation occurred.

In the full-grown forms the pigment became immotile, while the protoplasm became more refractive and homogeneous. In stained preparations he claims that quinin causes the chromatin to lose its power of staining and in the sporulating forms most of the segments contain no chromatin.

Zieman[7] found that when quinin is administered during apyrexia, the parasites become fragmented, but the chromatin remains normal in appearance, while if the drug be given at the time of fission this process was not hindered, even the chromatin dividing as usual.

Action upon the Quartan Plasmodium.—Antolisei, from his observations, concludes that the adult quartan plasmodium is not affected by quinin, development and sporulation occurring as usual; but in the attack following the administration of the drug, the young intracellular forms occur in much smaller number.

Golgi[8] agrees with Antolisei, but found that the effect of the drug upon the young parasites varied, many being killed, while others were hindered in their development which produced irregularities in the type of fever. He claims that the drug does not affect the adult quartan parasite.

Mannaberg[9] found that the changes observed in the quartan plasmodium in stained preparations of the blood after the administration of quinin were the same as those observed in in the tertian plasmodia.

Action upon Aestivo-Autumnal Plasmodia.—Baccelli[10] observed that in æstivo-autumnal infections quinin produced an increase in the ameboid movements, and that the plasmodia disappeared from the blood without any degenerative changes being apparent.

Marchiafava and Bignami[11] after a careful study of the action of quinin upon the æstivo-autumnal plasmodia determined:

(1.) That several hours after the administration of quinin the young endoglobular parasites do not undergo any change, their motility persisting and being in some cases, very active.

(2.) That after a few hours the parasites become discoid in shape and are seen emerging or becoming detached from the erythrocyte.

(3.) That staining by Romanowsky's method reveals no distinct difference in the morphology of the parasites which have been exposed to quinin.

(4.) That while no morphologic changes occur, development is hindered as shown by the fact that the young unpigmented parasities do not become pigmented, thus proving that nourishment is absent, and growth cannot occur, the result being the death of the young parasite within the erythrocytes or in the blood plasma after leaving them. The erythrocytes containing the dead organisms are ' brassy" and much crenated.

These authors believe that quinin not only acts directly upon the plasmodia, but also modifies the erythrocyte in such a way that it becomes impossible for the plasmodium to develop within it. In conclusion they say:

> "Quinin acts upon the malarial parasites in that phase of their life in which they are nourished and develop. When the nutritive activities cease by an arrest of the transformation of hemoglobin into black pigment, and the reproductive phase begins, then quinin is ineffectual in its action."

La Monaco and Panichi[12] claim that the resistance of the plasmodia to quinin is greatest during the apyrexial period, and least at the approach of and during the pyrexial.

They experimented by adding solutions of quinin of different strengths to microscopic preparations of fresh blood containing the plasmodia, a method which is unsatisfactory as it is impossible to prove that the changes which they describe actually occur in the parasites within the body. They found that the effect of quinin varied with the strength of the solution employed, weak solutions causing swelling of the parasites and stimulating ameboid movement; medium solutions greatly stimulating movement, resulting in the extrusion of the parasites from the erythocytes; while strong solutions caused contraction and death.

Cappogrossi[13] concludes, from his researches, that the exit of the plasmodium from the erythrocyte is not the result of the specific action of quinin but is purely physical, being due to the hypotonicity of the quinin solution. He claims that quinin in an isotonic solution of sodium chlorid does not cause the plasmodia to leave the erythrocytes, but results in loss of its motility while the protoplasm becomes more opaque and tinted with hemoglobin.

PERSONAL OBSERVATIONS.

In considering the action of quinin upon the malarial plasmodia, I shall first describe the changes observed in the fresh blood containing the tertian, quartan, and æstivo-autumnal plasmodia, and will then describe the appearance presented in specimens stained by the method mentioned.

I. FRESH BLOOD PREPARATIONS.

The Tertian Plasmodium (*Plasmodium vivax*).—The action of quinin upon the tertian plasmodium is evident in fresh blood specimens during every stage of the life cycle except immediately before segmentation. The changes produced by the drug consist chiefly in a granular degeneration of the protoplasm and fragmentation, the latter being most common in the nearly full grown parasites. To these changes should be added a great diminution in the amount of pigment in the developing forms, thus showing, as first pointed out by Marchiafava and Bignami, for the æstivo-autumnal parasites, a marked disturbance in the nutritive functions of the organisms. The effect of the drug varies with the time of administration, but it is effective upon all but the segmenting bodies, and therefore exercises its curative action whenever given, whether in one large dose just prior to segmentation or in divided doses.

If quinin is administered when the young intracorpuscular parasites are present the changes observed are a very marked increase in ameboid motion, followed in an hour by a decrease and finally by complete cessation, but the cessation of ameboid motion, however, does not always imply that the organism has perished. During the stage of stimulation the ameboid motion may become very active, the pseudopodia being projected so swiftly that it becomes almost impossible to follow the process with the eye.

In those instances in which the young parasite is "ring" shaped a certain series of changes may often be observed which throw considerable light upon the exact nature of these "ring forms" and which will be described fully in considering the action of quinin upon the æstivo-autumnal plasmodia.

After the cessation of motion the young plasmodia become "ring" shaped or perfectly spherical, and much more sharply outlined than the normal tertian plasmodium, the protoplasm being very refractive and finely granular in appearance. At this stage no shrinkage of the organisms was observed, as described by Golgi.

If now the blood is examined at regular intervals it will be found that the plasmodia diminish gradually in number up to the time of segmentation, showing that at every stage of their growth quinin is capable of destroying them. Although this is so, a considerable number succeed in developing and finally reproduce by sporulation, but, as will be shown in studying stained specimens, even these more fortunate organisms develop atypically, as the majority of the spores are sterile and incapable of further development. In those plasmodia which perish prior to segmentation, quinin, as a rule, causes fragmentation, and eventually complete degeneration. Such fragmented parasites are very numerous in specimens of blood from tertian infections after the administration of quinin, and in those instances in which the drug has been given after the formation of pigment, fragmentation is the most common form of degeneration but is always preceded by increased motility of the pigment and by an increased refractive index. Numerous erythrocytes are seen containing organisms which have become separated into two or more portions which may or may not contain pigment. When pigment is present it may be motile or immotile, and collected in the form of rather large blocks or masses, or in fine granules distributed throughout the protoplasm. The protoplasm of the fragmented organism is always more refractive than in the normal tertian plasmodium and may or may not appear coarsely or finely granular.

In many instances the fragmented parasites are extruded in whole or in part from the erythrocytes and thus become free in the plasma, from which they quickly disappear, and in tertian infections after the administration of quinin it is very common to find many free degenerated parasites in the blood. Fragmentation of the tertian plasmodium due to quinin occurs at every stage in the human life-cycle of the organism up to the reproductive stage, but I have never seen any evidence of the process in sporulating bodies.

While degeneration by fragmentation is very often the result of the action of quinin upon the tertian plasmodium, it does not invariably occur, for many of the plasmodia present certain other changes which do not, so far as can be determined, eventuate in fragmentation. These changes consist in a marked shrinkage in the size of the organisms, loss of motility of the pigment, and increase in the refractive index, together with a more or less well marked granular degeneration of the protoplasm.

In all organisms which present the changes which have been described, and especially in those which have been acted upon by quinin prior to pigment formation, the amount of the latter is reduced, thus proving that the nutritive activity of the parasites is injured and growth either prevented or hindered.

Upon the full grown tertian plasmodium, prior to the beginning of segmentation, quinin exerts a marked action, causing a shrinkage of the organism, and a markedly granular appearance of the protoplasm, the pigment becomes immotile and is collected in large clumps throughout the protoplasm or is distributed about the periphery in small masses. Fragmentation may occur but it is not common, as it is in the younger forms.

When quinin is administered just at the beginning of sporulation it produces no morphologic changes in the plasmodium, but if it has been present during the period of growth it will be found that the segmenting bodies, which have evidently partially resisted the action of the drug, are smaller, appear more refractive than normal, while the number of segments are reduced. As will be shown in describing the action of quinin as presented in stained specimens, not only are the segments reduced in number but many of them are sterile.

There can be no doubt but that quinin is very fatal to the young spores which result from segmentation, but it is not fatal to all of them, even when it attacks them while they are free in the blood plasma, for in every case careful examination will demonstrate that some escape, penetrate the erythrocytes, and undergo more or less complete development. This can be demonstrated even in those cases of tertian malaria which do not present clinical symptoms of the infection after the initial administration of quinin.

From the changes which have been described it will be seen that if quinin is administered when the blood contains the young intracellular plasmodia of tertian malaria, and then is examined at regular intervals, it produces death in a certain number, while others are able to develop more or less perfectly but are undoubtedly injured during every stage of their growth, which injury may be followed by death at a later period or by atypical development. If sporulation occurs, the spores are reduced in number and most of them are sterile. Upon all forms of the pigmented tertian plasmodium until the beginning of sporulation, quinin has a marked action, causing either fragmentation or granular degeneration of the organisms.

The effect of quinin upon all stages of growth of the plasmodium is most marked when it is administered in divided doses at regular intervals of time, thus keeping the blood saturated with it. If given just prior to the chill in one large dose, the majority of the young plasmodia are destroyed while free in the blood-plasma but those which escape and develop present but little evidence of the action of the drug as would be expected, elimination being rapid and the blood being free from quinin for several hours before the next dose is administered.

The Quartan Plasmodium. (*Plasmodium malariæ.*)—The effect of quinin upon the quartan plasmodium is practically the same as its effect upon the tertian, in all stages of its development. My findings in this regard are contrary to those of Antolisei and Golgi,[14] but agree with those of Mannaberg.[15] In the young intracellular forms development is hindered or stopped, there being the same initial stimulation of ameboid movement, while in the older forms fragmentation and granular degeneration occur as frequently as in the tertian plasmodium.

The majority of the young quartan plasmodia are destroyed while free in the blood plasma; many, severely injured, penetrate the erythrocytes, and die at a latter period of development or proceed to sporulation, producing numerous sterile spores, while a few escape altogether and develop normally.

As in the tertian infections, the effect of the drug is most apparent when it is administered in divided doses given at regular intervals.

The Aestivo-Autumnal Plasmodia (*Plasmodium immaculatum.*)—As has been stated in reviewing the literature of the action of quinin upon the æstivo-autumnal plasmodia, in fresh specimens, Marchiafava and Bignami[16] found that after a few hours the drug causes the endoglobular plasmodia to assume a discoid form and to leave the erythrocytes. Before the alteration in shape they observed that motility was normal or increased.

I have been unable, as yet, to study the action of quinin upon the sporulating æstivo-autumnal plasmodia, my observations being confined to the hyaline forms, the pigmented "rings" and the young pigment bodies.

A few hours after the administration of quinin, the time varying with the rate of absorption of the drug, the hyaline "ring forms" become much more refractive and sharply cut than normal while the ameboid motion is always greatly stimulated. In most instances, the "ring forms," owing to the great increase in the activity of the ameboid motion, lose their distinctive form, becoming discoid or assuming bizarre shapes, and not infreqeuently change their position in the erythrocytes very rapidly, occupying the same portion of the red cell only a few seconds at a time. I have not been able to confirm Marchiafava and Bignami's observations regarding the exit of the parasites from the red cell.

Upon the larger pigmented forms, quinin appears to have less effect the only change observable in the fresh specimens being an increase in the refractive index, while the outline of the plasmodia becomes more sharply defined. I have not observed degeneration by fragmentation in the æstivo-autumnal plasmodia, as the result of the action of quinin, although it is so common in the tertian and quartan plasmodia.

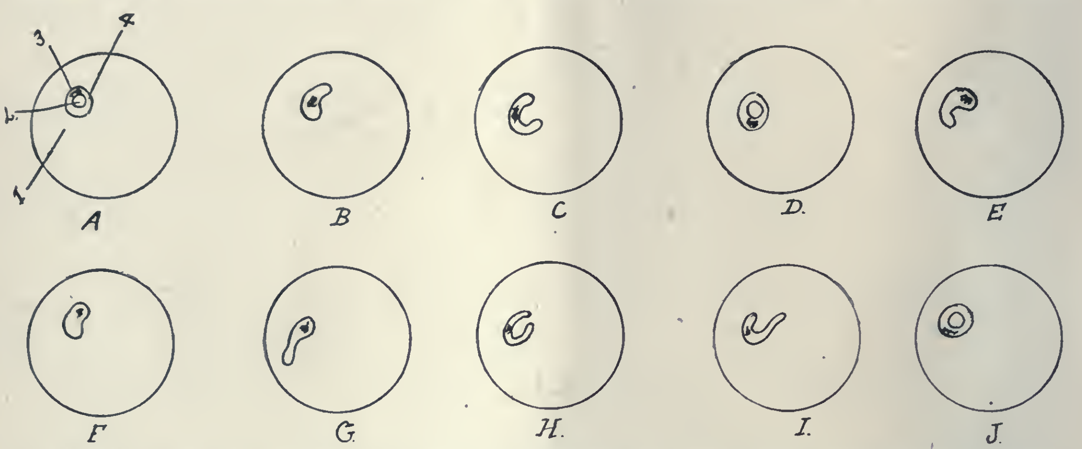

FIGURE 1.—Successive changes in a "ring-form" of the tertian æstivo-autumnal malarial plasmodium proving the true "ring" structure of the organism. Time, two minutes. A. 1. Red blood corpuscle. 2. Portion o red corpuscle enclosed by "ring." 3. Pigment within plasmodium. 4. Protoplasm of plasmodium.

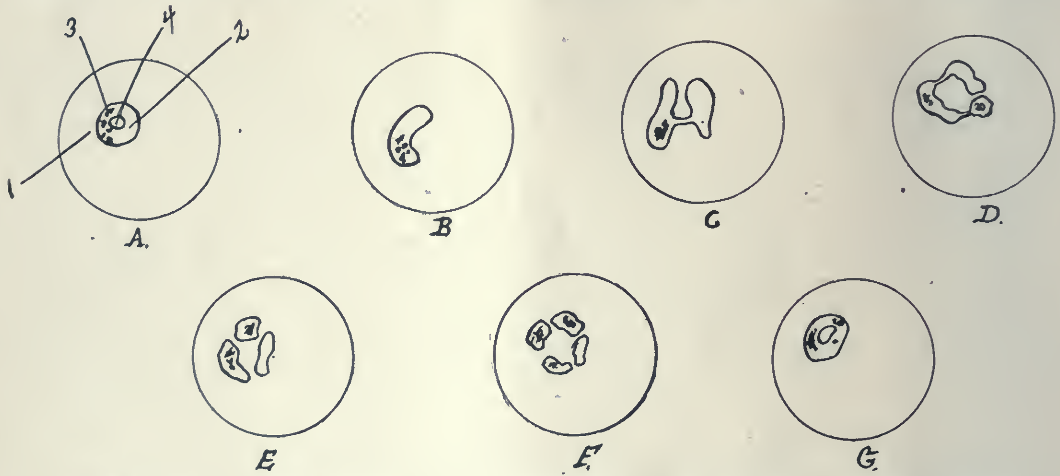

FIGURE 2.—A to G, showing successive changes occurring in a quartan pigmented "ring-form" plasmodium, these changes being repeated in the same order several times while the organism was under observation.

Nature of the "Ring Forms".—Since the first description of the so-called "ring forms" of the malarial plasmodia, much controversy has existed as to whether these forms are true "rings" of protoplasm or consist of a visible outer portion, ring shaped, enclosing an invisible film of protoplasm forming a large vesicular nucleus, which allows the greenish color of the erythrocyte to show through. The Italian observers, including Marchiafava and Bignami[17] claim that the latter explanation of the "ring forms" is correct, while Zieman[18] and Mannaberg[19] conclude that the "ring form" is a true ring, composed of a band of protoplasm surrounding a small portion of the substance of the erythrocyte.

In studying the effect of quinin upon the "ring form" of the tertian, quartan, and æstivo-autumnal plasmodia, I have repeatedly observed certain phenomena which prove conclusively that the "ring forms" are true rings, for in no other way can such phenomena be interpreted.

I have already mentioned the great increase in the ameboid activity of the "ring forms," especially in the æstivo-autumnal infections, after the administration of quinin. In observing such stimulated "rings" I have a number of times seen the separation of the "ring" at some portion of its circumference, accompanied by extension of the separated ends until the organism became almost straight, followed immediately by the junction again of the separated portions, thus reproducing the original "ring" form. This process of separation and union I have seen repeated a score of times in the same organism.

In other instances I have also observed the separation of the "ring forms" into as many as four distinct portions which afterwards became reunited, forming again a perfect "ring." Figures I, and II, represent the changes described and were drawn while the plasmodia were being observed. The division of the quartan "ring" into four portions, as shown in Fig. II, and their reunion, was repeated ten times during the period of five minutes in which the parasite was under observation.

In very rare instances I have observed this process in specimens uninfluenced by quinin, but it occurs most frequently after the administration of this drug.

[*To be concluded.*]

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TUBERCULOSIS OF BURSAE AND TENDON SHEATHS.

BY
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These diseases are sufficiently common in this part of the world to deserve attention, and need such attention all the more on account of the lamentable results which follow lack of diagnosis and the consequent bad treatment. Simple incision with subsequent infection of a tuberculous tendosynovitis has been an entirely too common and disastrous error in the practice of even quite eminent surgeons.

It seems quite possible for either of these lesions to be the first tuberculous process to appear in an individual, but such patients usually develop later other tuberculoses.

The localizing causes of these tuberculosis are hard to determine and the classic explanation of a *locus resistentiæ minoris* due to a slight injury forming a nidus for the growth of the tubercle bacilli must be accepted in lieu of a more precise explanation. The most tenable hypothesis as to the origin of all local tuberculosis is that there is first established a tuberculous adenitis with areas of caseation from which the tubercle bacilli gain access to the general circulation and so are carried to regions where slight injuries and extravasations of blood favor their lodgment and growth.

This view must be modified to a certain extent to reconcile it to the results obtained by Ravenel.[1]

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[1] "Relation between Human and Bovine Tuberculosis," M. P. Ravenel; pages 34 and 35, Vol. 29, Trans. American Public Health Association, 1903.

He fed dogs upon butter mixed with a pure culture of tubercle bacilli and was able to recover the bacilli from the thoracic duct. This throws new light upon the problem of infection with tuberculosis, making it possible for tubercle bacilli in food to stand in an etiologic relation to general or distant local tuberculosis without tuberculosis of the alimentary tract and without tuberculous adenitis.

Although it must be admitted that it has been demonstrated that tuberculosis in its various forms may arise directly from the entrance of tubercle bacilli into the circulation from the intestinal tract, still the ingestion of food containing tubercle bacilli is, fortunately, not a common occurrence, but a very rare one. On the other hand, the lack of sanitation against tuberculosis leads to the respired air being often loaded with tubercle bacilli which, lodging on the mucous membrane of the respiratory tract, may be carried to a lymph node and there set up a tuberculous adenitis. The bronchial and cervical lymph nodes in this way may become the common primary locations of tuberculosis. and later by their caseation stand in a causal relation to other local tuberculoses.

Pathologically, tuberculous bursitis and tendosynovitis may occur in three distinct forms, differing considerably in their gross and microscopic appearances, but less in their clinical symptomatology. In the first and most common form there is a distention of the bursa or tendon sheath by serum, accompanied by the presence on its walls and free in its cavity of numbers of the so-called "rice-bodies or melon-seed bodies." With these there is more or less thickening of the sac wall by fibroid tissue with, rarely, areas of caseous degeneration. In the second form the cavity is lined with a thick layer of tuberculous tissue which resembles ordinary granulation tissue in its gross appearance, but which microscopically shows tubercles and areas of caseous change. The amount of caseation varies in different cases and with the acuteness of the process in any given case, the more acute and rapidly progressing cases giving the larger mount of caseous material. The fluid in these cases is moderate in amount and may be serous, bloody, or pseudopurulent in character. Such a tuberculous process is apt to spread from its original location to the contiguous structures and thus infect fascia and joints. In the third and rarest form there is great overproduction of fibrous tissue, causing massive thickening of the wall of the affected cavity. This new fibroid tissue seems macroscopically normal, but the microscope usually, and animal inoculation regularly, shows it to be tuberculous. Its amount varies with the chronicity of the case, being largest in amount and most perfectly developed in the most chronic cases, representing nature's response to the long-continued irritation caused by few or nonvirulent bacilli.

In tendosynovitis the tendons are affected differently in the three forms of the disease. In the first form, for a long time they remain unimpaired, but ultimately are attacked and destroyed. Early diagnosis and treatment in this form of the disease ensures dealing with at least comparatively healthy tendons. In the second form the tendons are attacked very early and become covered with tuberculous tissue, which penetrates into their substance, forcing apart the fibers and gradually turning them into a pulpy mass, a condition often resulting in spontaneous rupture. In the third form the tendons may or may not be involved early, but regularly are so at some time, becoming thickened and firmly ankylosed to their thickened sheaths. This third variety of tuberculous change is very rare in the tendon sheaths, even in comparison with its occurrence elsewhere, it being in all locations the rarest form of local tuberculosis.

Location.—While these processes may spring up at any anatomically suitable point, practically the tendon sheaths are attacked very rarely except in the hand and wrist, there being little choice between the extensor and flexor tendons. Rare locations are the sheath of the tendo-Achilles, the hamstring tendons, and those about the shoulder-joint. Bursal tuberculosis is much less closely limited, being possible in any bursa normally situated or acquired, but most common in bursæ which are the more ordinary seats of other forms of inflammation. The prepatellar bursa naturally leads in frequency of tuberculous involvement, followed by the olecranon bursa. Other bursæ rarely involved by simple inflammations are not infrequent sites of tuberculoses, as the subdeltoid bursa at the shoulder and the subpsoas and gluteal bursæ at the hip. Such lesions about the hip and shoulder are important because they may when neglected involve the adjoining joints.

The symptomatology of all three forms of the disease varies very little. The presence of an indolent doughy swelling at a bursal site or over a tendon sheath leads to a suspicion of tuberculosis, which is confirmed if the presence of rice bodies can be determined by palpation. Local and general afternoon rise of temperature and the presence of tuberculosis elsewhere strengthen the diagnosis. The use of tuberculin injection for diagnosis will rarely be advisable in these cases, as exploration with the knife is both more certain and greatly safer.

The prognosis as to life is good when appropriate treatment is promptly instituted, but these lesions share with other local tuberculoses the danger of dissemination, and the great probability of being only secondary to other more important changes. The prognosis as to the restoration of tendon function varies in the three varieties of the disease. Early operation gives good functional results in the first and third varieties of the disease, but can rarely do so in the second, in which the tendons are generally impaired very early.

Treatment.—The ideal treatment of any local tuberculosis is the complete excision of all tuberculous tissue and the closure of the operation wound for union by first intention. This result can be obtained in a large percentage of tuberculoses of bursæ, and no other treatment should be considered when excision can be accomplished. In the case of deeply placed or inaccessible bursæ, incision, curetment, carbolization and packing with iodoform gauze is the method of choice. In tuberculosis of the tendon-sheaths the preservation of tendon function becomes the first consideration, and must modify the operation. In all cases the ideal procedure is complete excision of the whole tendon-sheath, and the formation of a new sheath by blood-clot organization. As most of these lesions are located about the wrist, involving the numerous and complicated tendon sheaths there present, a total excision of the disease becomes quite a formidable proceeding, and the result of any error in aseptic technic disastrous.

In view of these facts and the unfortunate results too often observed after incomplete or unskilled attempts at excision, some less formidable substitute is much to be desired. Several methods have been extensively exploited and have attained varying success.

The injection of iodoform emulsion into the aspirated cavity has probably enjoyed more popularity than it deserved, and is now seldom used. A most efficient substitute for excision, and one, on account of its ease of execution and the satisfactory results obtained, oftentimes to be preferred to the more formidable operation, consists of a free incision which exposes the full extent of the disease, the removal of all rice-bodies, the soaking for at least one minute of the whole interior of the tendon sheath in 95 percent carbolic acid followed by alcohol and the suture of the sheath and overlying structures separately without drainage.

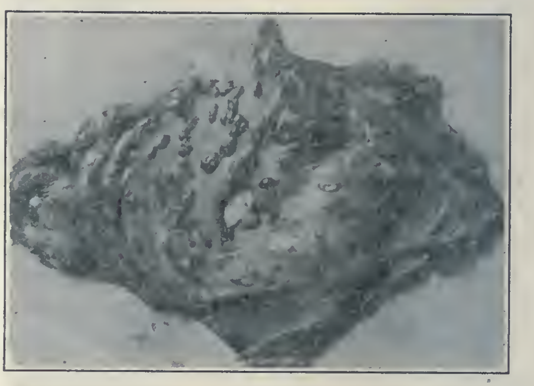
Such treatment is only applicable to the first variety of tuberculous tendosynovitis, but as this comprises the great majority of cases observed, and as the results seem to be equal or even more favorable than those obtained by complete excisions, the procedure has certainly much to recommend its adoption in all suitable cases. As an illustration, I can report a very extensive tuberculous tendosynovitis of the flexor sheath of the right hand in a laborer of 36. The patient had a caries sicca of the right shoulder and a tendosynovitis, as noted, with no other tuberculous lesions demonstrable. The thecal swelling extended from three inches above the wrist down to the base of the little finger, and rice-bodies could be easily felt and pushed from the palm to the arm, giving the usual creaking and crepitation. There was complete disability, the patient being unable to close the hand or to hold objects securely.

As incision was made into the distended sheath in the forearm, and later extended through the anterior annular ligament into the palm, and a large number of rice-bodies evacuated, after which without curetting 95 percent carbolic acid was freely used, neutralized, and the wound sutured in layers and put up in plaster-of-paris. Union was prompt, and there had been no recurrence after four years. The function of the hand is good and there is no evidence of former disease except inability to flex the little finger completely. The man uses his hand constantly in heavy labor, and when I last saw him was wheeling a barrow without discomfort.

The rontgen-ray treatment bids fair to be of considerable benefit in these cases, but it cannot remove rice-bodies, and also tends to increase connective tissue change, and hence may prove damaging in tendon-sheath tuberculosis by favoring dense adhesions.

Bearing upon the question whether these local tuberculoses can be the only expression of the disease, the photograph of a rare case of tuberculous bursitis illustrating the process of formation of the rice bodies in the first variety of the disease may be of interest.

The case is doubly rare because the disease occurred in a robust woman of 30, without other demonstrable tuberculoses, and because it was situated in an adventitious bursæ. The patient was five feet, seven inches tall, and weighed about 185 pounds, and was a picture of robust health. She had been a teacher of physical culture and had done various athletic stunts upon the stage, during which she had worn high laced shoes, to which she attributed her trouble. This was a slightly painful swelling over the middle of her left shin and another soon after over her right kneecap. Examination within a few weeks after she first noticed the swellings showed a boggy, indistinctly fluctuating swelling over the middle of her left tibia, which on palpation gave the sensation common to rice bodies. The swelling over the right knee was a moderately enlarged, tightly distended prepatellar bursa. There was slight local heat and tenderness over both swellings, but her general temperature was normal, and a careful examination by the dispensary internist failed to discover any other tuberculoses. Her general health appeared perfect.



Primary tuberculosis of an adventitious bursa, showing the formation of rice bodies.

Operation showed that there was an adventitious bursa formed at the expense of the deep fascia at the middle of the left leg. This was filled loosely with clear serum and contained a moderate number of loose rice-bodies, while its walls were thickened, red and studded with polypoid outgrowths resembling the rice bodies in section and apparently identical with them in every way except their local attachment. The prepateller bursa was found in exactly the same condition, except that it was more tensely filled with serum. Both were excised and the wound closed without drainage, with prompt primary union. The patient is still alive and well after three years, and has developed no tuberculosis of any kind.

I have thought this subject worthy of consideration because. (1.) The conditions considered, while relatively rare, are sufficiently common to deserve attention. (2.) Correct diagnosis and proper treatment are imperatively demanded to avoid disaster. (3.) Excision and primary healing is the ideal operative procedure in all cases. (4.) Incision, evacuation, carbolization, and primary union can be substituted for excision in many cases of tendosynovitis, with equally good, or even better, results.

THE CONTAMINATION OF MILK AT THE DAIRY.

BY
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Milk, the most easily contaminated of all foods, is handled in the most careless manner. The food value of pure milk is so important in infant feeding, and for the general consumer, that more stringent measures to preserve its purity should be taken. As a carrier of disease milk has no equal. It has been proved that epidemics of typhoid fever, scarlet fever, diphtheria, epidemic diarrhea, sore throats, and other diseases have all been carried by impure milk. The food value of milk, great as it is, may be readily destroyed, but fortunately it may be as readily preserved.

The cow, naturally a clean animal but made filthy by confinement, is gradually being driven from the cities where human beings are crowded, and as a result greater dependence is placed every day upon the country neighbor for pure milk.

The preservation of the food value of milk is therefore shifted to the farm and dairies that have sprung up in the thickly settled districts. These dairies are in a large degree responsible for the health or ill health of the inhabitants of the cities.

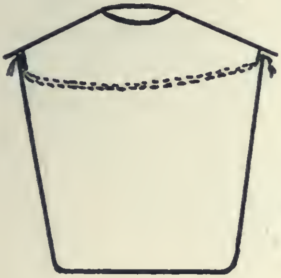

Fig. 1.

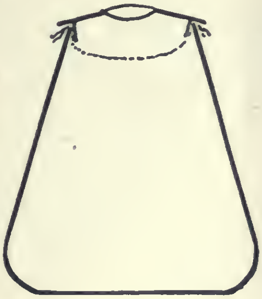

Fig. 2.

Dotted line indicates cheesecloth.

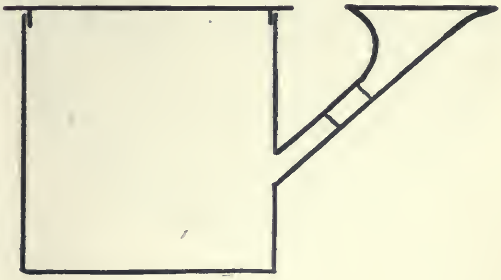

Fig. 3.

It is a crime to send to the city to be sold milk reeking with filth from the cow stable. And ignorance as to the method of producing clean milk is just one step behind criminal carelessness. Fortunately it is beginning to dawn upon the dairyman that he can get a higher price for clean, pure milk and this no doubt will be the means of preserving one of the most important of human foods.

During the last ten years, through the influence of the Agricultural Department of the United States and through the State Experimental Stations and the Dairy Schools, more cleanly methods have been introduced into dairies.

In considering the subject of milk contamination, the initial contamination first calls for attention, because the organisms that get into the milk during milking stay there longer and have the greatest opportunity to multiply and produce the acids which destroy the milk. It is these stable germs that are responsible for the early fouling of the milk.

How to prevent this initial contamination of milk was the object of experiments which prove emphatically that the old open bucket for milking must go. Its wide open top, ten times as large as is necessary, seems to have been invented for the cow to step in. It catches all the floating hair, the filth from the switching tail, and the numerous flies of the ordinary cow stable.

The use of the *covered* bucket, of which there are several kinds on the market, will do much to prevent the condemnation and destruction of milk at the receiving depots.

It is hoped the following experiments which are given in detail and in as clear a manner as possible will influence many to adopt this most valuable means of producing clean milk.

EXPERIMENT I.

December 1, 1904.

The experiment was conducted in an ordinary dilapidated, filthy farm stable. The weather was cold, snow was on the ground, and two boys did the milking; there were eight Jersey cows in the herd. No effort was made to cleanse the udders. From each teat two streams of the first milk were milked into an old bucket and given to the calves. Four cows were milked into a closed bucket and four into an open bucket. The strainer cloths of fine cheese-cloth doubled, were changed after each cow was milked and a fresh cloth used each time on the covered bucket. These cloths had been washed in a solution of washing soda and boiled and dried. The covered bucket used is shown in Fig. 1.

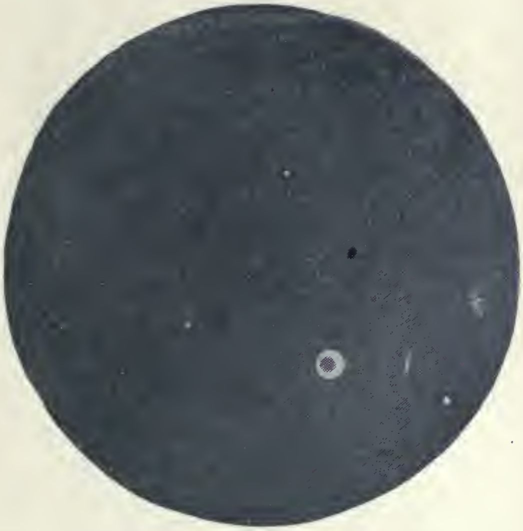

PLATE I.—500 germs per cubic centimeter.

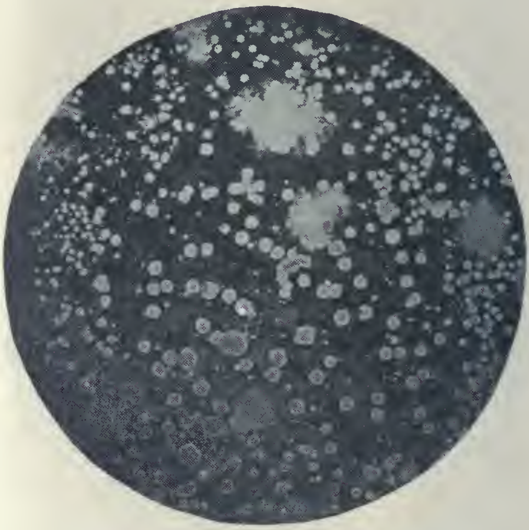

PLATE II.—38,000 germs per cubic centimeter.

The cattle were fed with dusty hay as was the custom during milking. The time required to milk each cow was about five minutes. A bacteriologic examination of the milk from each bucket was made to determine the initial contamination of the milk. The results of this examination are as follows:

CLOSED BUCKET.

First	cow's milk showed......	1100	germs per cc.
Second	" " "	4900	" " "
Third	" " "	500	" " "
Fourth	" " "	150	" " "

OPEN BUCKET.

First	cow's milk showed...	120,000	germs per cc.
Second	" " " ...	140,000	" " "
Third	" " " ...	17,000	" " "
Fourth	" " " ...	138,000	" " "

The following photographs show the agar plates upon which the germs were grown.

The first one is from the milk of the third cow which was milked into a covered bucket; this milk contained 500 organisms. The second is from the milk of the fourth cow in an open bucket, this milk contained 138,000 germs.

When it is remembered that stable germs multiply every twenty minutes, the countless millions of germs found in milk when it arrives at the receiving depots and the milk shops can readily be accounted for.

EXPERIMENT II.

December 9, 1904.

An ordinary dirty barn, with a dark filthy cow stable, was selected for this experiment. The same covered bucket, shown in Fig. 1, and an ordinary open bucket were used and results compared.

Two cows were milked into covered buckets and two into the open buckets, and two other cows were milked, the first half of the milk into a covered bucket and the second into an open bucket.

The same milker milked all of the cows.

CLOSED BUCKET.

First cow's milk showed .... 200 germs per cc.
Second " " " .... 50 " " "

OPEN BUCKET.

Third cow's milk showed .... 2,400 germs per cc.
Fourth " " " .... 3,440 " " "

CLOSED BUCKET.

Fifth cow's milk, first half,... 300 germs per cc.

OPEN BUCKET.

Fifth cow's milk, second half, 2,000 germs per cc.

CLOSED BUCKET.

Sixth cow's milk, first half,... 120 germs per cc.

OPEN BUCKET.

Sixth cow's milk, second half, 45,690 germs per cc.

The following photograph of the agar plates made from this milk shows one plate free from colonies, while the plate made from the second half of the milk has 45,690 germs per cubic centimeter of milk.

Plate III.—Free from colonies.

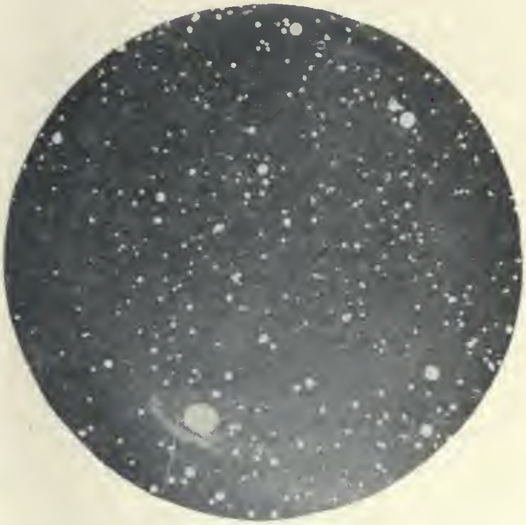

Plate IV.—45,690 germs per cubic centimeter.

These remarkable results by means of closed buckets were obtained without any extraordinary preparations and can be attained by any dairyman who observes cleanliness.

EXPERIMENT III.

August 16, 1905.

Experiment conducted in a fairly clean stable.

An ordinary open bucket was fitted with a lid having a four-inch circular opening and a double layer of cheese-cloth underneath. This lid was made by a local tinner and is practically the same as shown in Fig. 1.

The bucket was not sterilized, neither was the cheese-cloth, both having had only the usual washing and drying in the sun.

The herd was composed of thoroughbred Guernsey cattle. The cows were curried and cleaned, and the stable was clean and free from dust.

CLOSED BUCKET.

First cow's milk showed .... 3,400 germs per cc.
Second " " " .... 3,200 " " "

OPEN BUCKET.

Third cow's milk showed ....48,000 germs per c.c.
Fourth " " " ....36,000 " " "

The open buckets were used of the same size and shape as the closed buckets. The comparatively high germ-count in the milk from the closed bucket was probably due to the coarse cheese cloth used and because the buckets and cloth were not free from germs before being used. No specks of dirt, hair from the cow, or flies, were found in the milk from the closed bucket.

The small amount of cheese-cloth used on the bucket is a slight advantage.

EXPERIMENT IV.

August 23, 1905.

Experiment conducted at a dairy producing certified milk.

In this dairy is used a covered milk bucket, with a spout attached to the side with a sieve in the funnel. The milker sits on the bucket and milks into the funnel-shaped spout of the bucket. A wire-sieve strainer was used in the neck of the funnel for some time, but was found hard to clean and was discarded.

The buckets are sterilized in a steam box before milking and after each cow is milked, the bucket is emptied, and the funnel removed and washed inside with running water. This is probably a good plan when the water is pure, but if the water should be contaminated it would infect the milk.

The cows were milked in a clean milking room, separated from the stable; there was consequently but little dust in the milking room. The herd is composed of grade cows. Each cow is curried and cleaned twice daily and the udders are washed with water before milking.

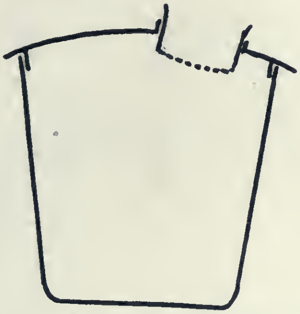

Fig. 4.—Dotted line indicates wire screen, 100 meshes to the inch.

COVERED BUCKET.

First cow's milk showed... 3,000 germs per cc.
Second " " " ... 520 " " "

OPEN BUCKET.

Third cow's milk showed... 13,200 germs per cc.
Fourth " " " ... 18,000 " " "

The advantage of this bucket lies in the fact that it is both stool and bucket, and in its use the dirty little stool so frequently handled by the milker can be dispensed with. A disadvantage, however, is that if the strainer is fixed in the funnel it is almost impossible to clean it on account of its location and if the strainer is removed, any dirt that may fall in the funnel is quickly washed down in the milk. This however, is not such a great disadvantage in a clean milking room and where the cows are cleaned twice daily.

EXPERIMENT V.

August 24, 1905.

This experiment was made in a well built farm stable.

This dairy has been using a covered milk bucket for the last six months with great satisfaction. The bucket used has a 5½-inch pan with a sieve in the bottom which fits in a collar in the lid of the bucket.

This pan is easily removed for cleaning and is washed in running water after each cow is milked. The bucket has no cracks nor corners for the collection of dirt, but is pressed or spun out of good heavy steel and then tinned. The cheese-cloth is done away with in this bucket and the bucket can certainly be readily cleansed.

The herd is composed of thoroughbred Guernsey cattle and all cows are curried and cleaned daily.

The milk bucket and cans are scrubbed with a brush and hot solution of washing soda, rinsed in water and placed in the sun and were found to be almost free from germs.

The barn is well constructed but is not clean nor free from dust. A general cleaning and whitewashing would lessen the chances of initial contamination.

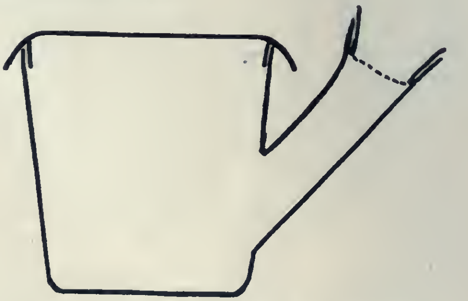

Fig. 5.—Dotted line indicates wire screen, 100 meshes to inch.

CLOSED BUCKET.

First cow's milk showed... 80 germs per cc.
Second " " " ... 2,000 " " "
Third " " " ... 340 " " "

OPEN BUCKET (WITHOUT LID.)

Fourth cow's milk showed... 84,000 germs per cc.
Fifth " " " ... 85,000 " " "
Sixth " " " ...540,000 " " "

EXPERIMENT VI.

September. 1905.

This experiment was conducted in a typical old filthy forage barn.

The bucket used is one made of spun steel, 12 inches high, having a spout from the side 5 inches in diameter, into the end of which is fitted a pan 5 inches in diameter. The bottom of this pan is made of a wire screen 100 meshes to the inch. The top of the bucket is covered with a flat lid upon which the milker sits. The position of the opening of the spout is such that the dropping of hair or filth from the side of the cow can not enter it, and being between the edge of the udder and the side of the cow it does not readily catch the dust and hair from the udder itself.

In a recent experiment in this barn three cows were milked into this bucket and the milk was examined at once and found to contain only 19 bacteria per cubic centimeter. Another three cows were milked into the same bucket with the lid off and the milk was found to contain 125,000 bacteria per cubic centimeter.

The bucket used is one of the best of the covered buckets, having the advantages and few of the disadvantages of the others, although the original cost is slightly greater than the others, but the fact that it can be used without cheesecloth, which is a decided source of trouble to dairymen who have but few facilities for its sterilization, is a source of great satisfaction.

The bucket is in three parts, all of which can be readily scrubbed and cleaned, and every part can be reached by the hand. There are no sharp corners for the collection of grease and dirt. With this bucket the dirty stool of the milk stable is done away with, as it is stool and bucket combined.

The small number of germs in the milk in the closed bucket shows the good work done by the screen in the sieve and the lid.

The immense number of germs in the open bucket is due to the dust in the barn which infects the milk so quickly that all the care taken subsequently by the dealer is of no avail. The milk sours readily and will probably be dumped by the inspectors at the depots.

The small cost of covered milk buckets leaves no excuse for the further use of the open bucket. This improvement contemplates little except a slight additional care on the part of the milker.

The cities demand cleaner milk. Milk standards are being raised. In several cities such standards have been set up by the health authorities that if followed to the letter, nine-tenths of the milk sent to them would be dumped at the platform.

Much of the contamination is caused through ignorance. Let us educate ourselves and standards will take care of themselves.

Milk that has been collected in any of the covered buckets described can be sent to the city in the hottest months of the year in cans and will show less then 30,000 bacteria per cubic centimeter if the milk has been well iced while at the dairy.

The simplicity of these buckets is much in their favor. The prevention of the entrance of dirt into milk is a thousand times more important than attempting to strain the dirt out of the milk after it has gained entrance.

It seems inconceivable, after it has been clearly demonstrated that thousands of pounds of stable manure are shipped in milk to large cities in the country in a single year—that people knowing this fact will continue to buy milk of this character because it is cheap.

The promiscuous use of chemical disinfectants by Boards of Health in places in which filth has accumulated, instead of removing it or preventing its collection, is on a par with the ordinary regulations of the Boards of Health in the cities which require the dairymen and farmers to strain the dirt out of the milk before it is sent to the cities.

The only logical method of producing clean milk is to keep it clean from the beginning and the only way that this can be done, unless barns are razed and thousands of dollars are expended, which in the present state of the milk business and dairy interests can only be thought of by the philanthropists or the multimillionaires, is to insist upon the personal cleanliness and good health of the milker and the use of *sterile, covered* milk buckets.

END RESULTS IN APPENDICITIS WORK.[1]

BY

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There exists at the present time among surgeons a difference of opinion as to the propriety of removing the appendix, when the abdomen is opened for other purposes. My own practice has been to remove this dangerous rudimentary organ, if the additional time necessary to do so would not jeopardize the chances of the patient for making a good recovery. So far, I have seen no reason to regret this course. Indeed, I have had many patients express to me their thanks for having relieved them of this dangerous incubus.

Opinion on this matter being divided, one must try to sustain his position and in thinking over the matter I concluded to try to find out, from the patients themselves, the ultimate results of the removal of the appendix, so far as they could be ascertained. Manifestly it would not be fair to base any opinion upon those cases in which the appendix was removed supplementary to other abdominal work. There would be so much difficulty in ascertaining how much of the result was due to the appendicectomy and how much to other operative work, that no satisfactory conclusion could be drawn. Again, it would not do to take account of cases of acute appendicitis, as there could be no room for argument as to the propriety of operation in these cases. In the third place, the difficulty in tracing ordinary hospital cases and the presumed unsatisfactory nature of any replies that they might make, led me to exclude them also. There remained, then, only the cases in which the appendix was removed for chronic or quiescent disease and accordingly I selected from my records 25 cases of this character in which the appendix had been removed. These were all private cases and in each instance the patient was an intelligent person, fully capable of estimating the results, good or bad, following operation. Many of these were interval cases, without any particular evidences of disease at the time of operation. The following questions were asked.

1. What is the condition of your general health now, as compared with what it was before operation?

2. With respect to pain in the abdomen, digestive disturbances, bowel movements, etc., is your condition better or worse than it was before operation?

3. Has your body-weight increased or diminished?

4. Are there any other results, good or bad, which you consider to be due to the operation?

Twenty-two replies were received. In answer to the first question, 18, or 82 percent answered that their general health had been improved; 4, or 18 percent, could note no change. None was worse.

With reference to abdominal symptoms, 16, or 73 percent, noted improvement; 5, or 23 percent could notice no change, while one patient reported that she was worse, but gave no details,

As to bodily weight, 13, 59 percent, reported a gain. In one case there was a gain of over 25 pounds within a year. Seven, 32 percent, noted no change while 2, 9 percent, reported that they had lost weight, but attributed the loss to other causes, such as subsequent illness, etc. In the replies to the last question as to any other results, good or bad, from the operation, many interesting things were noted.

None could notice any bad results attributable to the operation. One woman stated that her menstruation had been much better since operation; another that she was subject to frequent headaches before operation, but has had none since, and yet another that the feeling of relief and freedom from danger has been a great pleasure to her.

From the results of this inquiry, it will be seen that the removal of the appendix in these cases not only did no harm, but that in nearly every instance it did good. It might be objected that there is no analogy between the removal of an appendix the subject of chronic inflammation, or one which is quiescent, and the removal of an appendix in the course of an operation for other conditions. In answer to such an objection, I beg to submit the following argument. In the first place it is seldom that the appendix remains unaffected when neighboring organs and structures are diseased. Any peritoneal irritation in its vicinity is liable to involve the appendix. Again many gynecologic conditions are accompanied by constipation and any pathologic condition involving the cecum will probably affect the appendix as well. Viewed in the light of these considerations, the analogy between the two classes of cases does not seem so forced as it might at first sight. Further, it is difficult to tell from the appearance and feel of an appendix, whether or not it is diseased. An appendix which looks and feels normal may show the changes incident to chronic appendicitis, while, conversely, an appendix which looks to be diseased may be microscopically normal. If we confine ourselves to the removal of apparently diseased appendices, we shall leave many which are diseased and remove some which are normal. This being so, why not remove them all and so give the patient the benefit of the doubt?

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[1] Read by title before the Southern Surgical and Gynecological Association, Dec. 14, 1905

In the third place, the argument that the appendix is possibly an organ useful and necessary to the human economy does not appeal to me. If the teachings of comparative anatomy are of any value at all, we must agree that the appendix in man is, as Huntington states, "A part of the general cecal pouch which persists in an early developmental state and which we can regard as destined for further reduction and ultimate elimination in the course of evolution." If it is a part of the general cecal pouch and identical in structure with it, we can certainly assume that it is relatively so insignificant a part of the bowel that its removal can in no wise affect the rest of the intestinal tract, and if it is destined to evolutionary extinction, I can see no harm in anticipating the slow processes of nature by the quicker process of the surgeon. It is for those who assert the importance of the appendix to the human economy to prove their assertions, as the burden of proof is certainly on their shoulders. An extensive reading of the literature on this side of the question has not shown me anything so far but a series of "maybes" and "perhapses" which are pure speculation. All the solid arguments are in favor of the uselessness of the organ and we may feel justified in so regarding it until something more convincing appears than has appeared up to this time.

The question is often asked as to whether one has any knowledge of cases in which harm has been done by not removing the appendix when the abdomen is open for other purposes. Personally I have not met any case, in which having left the appendix in the course of other abdominal work, I have had to remove it afterward, but my colleague, Dr. J. Thomas Kelley, of Washington, has given me permission to use the following two instances in his practice, in which the leaving of the appendix worked harm, and in which death resulted which might have been avoided by the removal of the appendix at the first operation.

Case 1. Mrs. K., Married. Two children. Was operated on at the Columbia Hospital, in 1893, by Dr. Stone, for a large pelvic abscess. In October, 1904, she was taken with violent pain in the abdomen, while in the country. She was seen by Dr. Kelley three days after the onset of her illness and, by his direction, was removed to the Georgetown Hospital. She refused operation at first, but finally consented, after a week's delay. She was then operated on as a last resort and died three days later of peritonitis.

Case 2.—Miss B., aged 26 and single, was operated on, in 1897, by Dr. Kelley, for retroversion of the uterus, a ventral suspension being done. In January, 1903, Dr. Kelley was called to the country to see her, her attending physician having diagnosed appendicitis. Dr. Kelley saw her three days after the beginning of the attack, and confirmed the diagnosis, but found her so very ill that he declined to operate. She died 36 hours afterwards.

Here are two lives which might have been saved by a few minutes' additional work when the abdomen was opened the first time. On the other hand I have never seen or heard of a case in which an appendicectomy as a supplement to other abdominal work resulted in any harm to the patient, so that, from a purely operative standpoint, the weight of the argument is in favor of those who advocate this course.

The following conclusions may summarize this communication.

1. The appendix is a rudimentary organ; a part of the cecum; undergoing obliteration, and so far has not been shown to be in any way a necessary part of the human economy.

2. Reasoning from the results of operation in cases of chronic and quiescent appendicitis, the removal of the appendix in the course of operations for other conditions is justifiable.

3. The difficulty of determining from microscopic examination whether an appendix is diseased or not, is an argument in favor of the removal of the organ.

4. The fact that deaths have occurred that might have been avoided had the appendix been removed at the first operation, is an unanswerable argument in favor of the practice advocated in this communication, viz., that the appendix should be removed as a routine measure in abdominal work, provided always, that its removal will not prejudice the chances of the patient for a smooth recovery.

It takes but a few additional minutes to remove the appendix and when its removal may mean to the patient the difference between comfort and discomfort, or indeed, between life and death, is there any impropriety in advocating the removal of this dangerous ancestral relic?

TIMIDITY.[1]

BY

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of Cincinnati, O.

There has been no special work of much extent which bears directly on timidity. The short masterpiece by Dr. Harry Campbell, on "Morbid Shyness,"[2] most nearly touches the subject. One finds sentences or short paragraphs on *fear*, but rarely on *timidity*, in works on the emotions by such men as Hiram M. Stanley, W. Bevan Lewis, W. Preyer, Francis Galton, Charles Mercier, T. Ribot, D. Hack Tuke, Maudsley, Mark Baldwin. The physiology of fear has been partially worked out by Darwin, Mantegazza, Mosso, and Lange. Mosso's *La Paura* is a classic. *La Timidite* by L. Dugas is excellent. G. Stanley Hall[1] often touches the subject in *A Study of Fears*, and again in his *Showing Off and Bashfulness as Phases of Self-Consciousness*.[2] I quote from the latter, because I think his words furnish a fine introduction to the study of a more special form of feeling.

"In our day and civilization, the hot life of feeling is remote and decadent. Culture represses and intellect saps its root. The very word passion is becoming obsolete in psychological literature, which in this field elementarizes, repeats, is pedantic, or affectedly didactic. The life of feeling has its prime in youth, and we are prematurely old and too often senile in heart. What does the psychologist of the study know of hate that makes men mad or bestial, of love that is not only uncalculating, but is stronger than life, of fear that shakes the pulses, and courage that faces death in its cruelest forms unflinchingly, ... of joy that threatens sanity. Our sensibilities are refined, our experience serene and regular, we are salaried, protected, our very philosophy as well as our religion suppresses and looks with platonic contempt upon enthusiasm, even in matters of the cold reason. We have experienced no soul-quaking reconstruction of an inner nature, like Paul, Augustine, Luther, and we are anemic and more prone to deny than to believe, to speculate, than to do; turn to novels and the theater for catharses of our emotions. Our sentiments are over-subtilized, sophisticated, and reduced to puny reactions to music and art that are nine parts criticism and one part sympathetic appreciation. What we have felt is second-hand, bookish, shopworn, and the heart is parched and bankrupt. . . . . In fact, mind and life are one and inseparable, and we lack fulness of soul, because we are undervitalized."

A hundred years ago, or even fifty, a question of feeling would not have been scientifically discussed. It would not have been coldly and experimentally handled. But the calm and stern intellectualism, which could mold superstition into science and which could bid the emotions lie still, has now turned its scrutiny upon that suppressed and neglected existence, and found it worthy of notice. A strong reaction against mere intellectual attainment is now being felt, and feeling is on its way to a just recognition in consciousness. And why has *feeling* finally forced a recognition? What is its place in the psychic economy?

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[1] Read before the Cincinnati Medical Research Society, Dec. 21, 1905.

[2] *The British Medical Journal* for September 26, 1896,

[1] *The American Journal of Psychology*, Vol VIII:

[2] The *Pedagogical Seminar*, Vol X.

It must be considered as an ultimate of consciousness. You hear the loud ticking of a hoarse-toned clock. It irritates you, pains you, makes you cross, and even angry? Where is the feeling in this case? It lies between your auditory perceptions and the general trend of your nerve-activity. The two motions actually clash. Mercier says, "As the physical substratum of thought is the establishment of a dynamical connection between two discharging elements" so, "that of feeling is the discharge itself." Now when the two elements correspond, pleasure is produced, when they are repellant to each other, pain.

Pleasure it seems to me, is an expression of consciousness accompanying compatibility between existing physiologic activity and that set up by any given stimulus. Pain is incompatibility between the same.

Pain, as well as pleasure may arise directly and immediately in present sensations, or it may arise in *thoughts* of sensations previously experienced. In other words, it may be *presentative* or *representative*. All representative feelings may be divided into: (1.) Those arising in an *outgoing activity* of the organism toward the departure of the pleasurable; as forms of sorrow. (2.) Those manifested by *shrinking*, *contracting*, or *withdrawing* of the organism at the approach of the painful; as, in the modifications of fear. (3.) Those manifested by an *outgoing* of the organism to oppose an unpleasant obstacle in the environment; as in forms of pugnacious feelings—anger, fury, jealousy, envy. (4.) Those expressed by a *voluntary turning away* from the painful; as in contempt, disdain, scorn. Of these four groups, *fear* is the most closely related to our subject. It is a painful feeling which arises in thoughts of sensations previously experienced and manifested by a shrinking, contracting, or withdrawing of the organism at the approach of a similar experience. The thoughts which give rise to these fears may not represent at all the usual cause for fear. They may be entirely built up in imagination; but to the one who experiences them, however, they are real, and so deserve attention.

There are also *presentative* fears. These principally originate in shocks to the nervous system on account of new combinations in muscular, visual, or auditory tension; or they originate in an uneasiness of uncertainty as to results. But this class does not help us along so much as the other toward the understanding of timidity.

Timidity is hardly a pure, defined feeling; but it involves, more or less, all the preceding forms of fear. It is rather an *attitude* of shrinking from one's environment. It is sometimes a serial, sometimes a synchronous coalescence of numerous experiences of fear, but may, however, be manifested only along certain lines. Timidity has many modifications, and disguises. In the presence of persons, bashfulness, shyness, and backwardness are exhibited; in the presence of an event *plus* persons, embarrassment, lack of self-confidence; and in the presence of an event alone, worry. Shyness has been called "a sudden and acute realization of personality," also, " a soul, shuddering at its own nakedness."

Modesty, demureness, coyness, claim a short discussion; also, the inverted forms of timidity, as unnatural reserve and aggressiveness, obsessions or the degree of obstruction, in the environment, or, from another view-point, the resistance offered by the subject to his environment; and what part timidity plays in genius, insanity, crime, degeneracy. The evolution and dissolution of fear at different ages, the genesis and exodus in one individual, as well as variations due to ethnologic considerations, deserve attention. You see the vastness, as well as the profundity, of the subject.

As a matter of fact, I shall attack only a very small part. My discussion includes rather, pathologic digressions in adults of ordinarily healthful psychoses. The cases which I have collected bear the same relation to the profoundly degenerate cases as occasional hallucinations and nightmares, slight obsessions and fits of melancholy in the alertly intelligent and useful classes of society, bear to the submerged consciousness of the insane.

The following method was used in gleaning data. Type-written questions, with spaces left for answers, were distributed to truthful and intelligent persons, regardless of whether they seemed especially timid or not. Each set included 60 definite questions with sub-questions. Of the 500 lists of questions intended for distribution, I had collected only 49 sets of answers, when the work was suspended. Each person was allowed his own interpretation of the term. The result is a varied array of little shrinking peculiarities—peculiarities from which however, some conclusions may be drawn.

It is impossible in a short time to discuss the whole of even this limited territory, so I have selected only such parts as correspond, roughly, to etiology, symptoms, sequels, and treatment.

Four persons displayed a spirit of facetiousness in their answers; and these were therefore rejected. Forty-five cases were then left. They include 27 females and 18 males. The ages range from 17 to 54 years, but the majority were between 25 and 40 years. According to occupation, there were two lawyers, two physicians, one medical student, one dentist, one civil engineer, one book keeper, two highly educated women with a variety of interests, one society woman, one woman engaged exclusively in domestic and church duties, 15 teachers in university and high schools, three fellows of the University of Chicago, nine students at the University of Chicago, four students of Bryn Mawr College and two high school students. These were such when the questions were distributed. Since then, a few have become quite prominent in their vocations and all have advanced in their various callings.

The psychic *predisposing cause* or more properly, the diathesis, in the cases under discussion, is the social instinct, which involves a desire for the good opinion of others. The *exciting cause* is a consciousness of some personal deficiency or peculiarity, which may, or may not, be noticeable to others. The lack, mental, moral or material, may be apparent to the subject only, on account of too great a sensitiveness or because he holds an unusually lofty ideal. It may also be the result of ignorance or inexperience on the part of the timid person concerning his value in the world. This same person if driven forth and compelled to measure his power with that of his fellows would perhaps find himself comparing favorably with them. The sub-causes may all be primarily reduced to the feeling of self-depreciation or of inadequacy to cope with existing conditions. This at least I conclude from the answers given in my cases. But the cynic might suggest that not self-depreciation, but a most disturbing anxiety lest *others* would depreciate a very valuable article, is at the root of a great many expressions of timidity, which are, in reality, nothing but a disguised form of conceit. Knowing my subjects, however, as I do, I can not attribute such a cause to them.

The question on this point was "What in your opinion are the causes of timidity?" The answers which I have omitted are included in the content of the answers quoted, which are as follows:—

Man, aged 54.—Principally appealing to the fears of children, pushing them in study beyond their capacity, and from punishment for failure to perform allotted tasks.

Woman, aged 24.—Cerebrovascular changes, due to lack of self-confidence.

Woman, aged 28.—I don't think I can answer this question. I think it exists in finer natures, in the keenly sensitive disposition, people who are intellectually acute, introspective, artistic. For this reason, I am glad I was born timid, for I think the quality of timidity is inseparable from other and finer qualities—is really indicative of their existance. Timidity is possibly excessive modesty and may be due to nervousness and extreme self-analysis. It certainly is morbid, and ought to be overcome if possible. I should make the distinction between timidity and modesty, that the one is abnormal and the other normal, the one morbid and the other sane.

Woman, aged 25.—A consciousness of self.

Man, aged 27.—Lack of absolutely robust sound health and self-confidence.

Man, aged 30.—In my case, the cause seems purely intellectual. I am not afraid to go ahead when I know I am right—but I consider matters from too many sides to be sure of this. In my associations with others, I am at ease, if I know their opinion is worth nothing, but I may have difficulty in sizing them up. I think I should be uneasy in all my movements if I felt badly dressed—that is, not in old clothes, but in cheap, badly-fitting ones.

Woman, aged 24.—A lack of perfect self-confidence. Over-anxiety to act up to some standard. Excessive self-consciousness.

Man, aged 38.—Knowledge of one's ignorance.

Woman, aged 29.—(A.) Physical, (1.) inherited deformity or lack of beautiful or normal structure. (2.) temporary, as illness, nervousness. (B.) Mental, excessive introspection. (C.) Social, which seems the chief cause to me, because it gives rise to a feeling of inequality from various sources; lack of opportunity for culture, or lack of money and position. To eradicate timidity, I should say, give us social equality. This is perhaps a strong statement—I recognize that there are some natures which have all social advantages and are still timid.

Man, aged 30.—In my case, excessive self-consciousness, due probably to deficient vital energy in childhood, extreme sensitiveness, (much increased by unattractive personal appearance) and an environment which did not promote contact with persons of similar intellectual interests, when habits were forming, and consequent self-centering.

Man, aged 28.—Aside from such facts as that the bull-dog is brave and the hare is timid, because they were made so, it seems to me that timidity, or what resembles it, may be due to nervousness and the ability or disposition to "look in all sides," *i.e.* due to extreme caution.

Woman, aged 24.—A morbid sensitiveness to the opinions which other people hold of you. It is accompanied by a quickness to condemn self—or feel guilty when there is no occasion.

Girl, aged 19.—Lack of confidence, sympathy, encouragement from parents, especially intellectually and in early life. Lack of social and financial advantages. Visible blemishes in my skin, etc., and defects in dress.

Man, aged 26.—Self-depreciation, based either upon sufficient or insufficient grounds.

Girl, aged 18.—Sickness in youth.

Woman, aged 21.—Self-absorption. A quiet, retired life, mostly with older people; lack of social experience.

Woman, aged 21.—A realization or perhaps, unfounded belief, that you are lacking in some particular.

Man, aged 27.—A high ideal and knowledge of one's inability to gain it, produces a greater or less timidity, no acute bashfulness. Bashfulness is often produced by suggestion. Outward conditions, such as poverty or physical deformity, have much to do in developing the outward expression of timidity or bashfulness; but the cause is an inward disposition or trait of character.

Man, aged 27.—A lack of self-knowledge and of one's relation to life.

Man, aged 31.—(1.) Lack of stable nervous system and good general health. (2.) Not being trained from childhood in matters of self-control.

Man, aged 27.—Feeling yourself less well-circumstanced than others, and inadequate early training.

Man, aged 22.—In my opinion, much timidity comes from amiability. I have some discomfort, because I am not larger, *i.e.*, fatter; also, because I am not stronger and more robust, but I never show it, and I doubt whether anybody thinks I have any such feeling.

Man, aged 28.—It seems to me that the very firmness or determination to carry out something may lead to mental and physical conditions resembling timidity . . . . . As to moral qualities, a keen sense of the rights of others and the impropriety of crowding or forcing myself into places, which, because of others claims, I have no right to, may give rise to appearances, which the unthinking or unconscientious may take for signs of timidity. Secretiveness is another trait of character which might be taken for timidity.

Woman, aged 28.—I think my feeling of timidity is best called a lack of ease. The knowledge of being appropriately and becomingly dressed diminishes this feeling more than any other one condition.

Man, aged 29.—If my physical organization were less nervous and my mental perceptions less acute and analytic, I should be less timid. If one perceive faults or deficiencies and is not affected to a degree of timidity, it is largely strung nerves and a fair amount of egotism.

Woman, aged 35.—It is a consciousness of a lack in myself, due to a feeling of being held at close range—as if I were under the microscope.

Man, aged 27.—The consciousness of having poor clothes and more homely features or more awkward manners was always a source of keen embarrassment in youth.

The foregoing answers often confuse the psychic cause and its physical correlate. It is practically impossible to separate the two; but for the sake of analysis, we may look now at one side, and now at the other. It is not the purpose of this paper to enter into a discussion of the etiologic somatic correlates—such as inherited neurotic taint, or a well-defined individual neurosis, imperfect nutrition, poor digestion, imperfect personal hygiene, bodily deformity, and sensory disturbances, of which the most common forms are myopia, deafness, and sources of peripheral irritation. A different class of cases would warrant greater emphasis on corresponding physical defects. Another class of cases, in a general discussion of etiology, would lead me to point out a moral causal defect, but my subjects seem to suffer from an excessive consciousness of self, due to a great wealth of affective and intellectual tone remaining undistributed.

In order to understand the *symptoms*, we must go far back into ancestral history. The first men—our aboriginal fathers—most probably retired in trepidation at the approach of the strange. They gradually became fleet and strong in running, and this was their method of self-preservation—of protection from extermination.

Later they learned to face their foe and became strong in combat. As civilization made physical combat unnecessary and removed man's fear of physical violence, the mental attitude became predominant. Man now faces his foe, but quakes in the face of mental violence. Criticism is a modern form of barbarism, the cruelty of which only those belonging to a higher culture, can judge. We shudder at the roasting alive and rack of the inquisition. Our successors will shudder at the mental roasting, sizzling, stretching, and dismemberment which we endure. Our ancestral aborigines could flee in the presence of a belligerent foe. In the absence of instinctive flight, we are privileged to substitute nervous excitement, due to the fear of psychic violence and largely, also, to the stress of inhibition.

Man's instinct of self-protection is worked out in such acts of boldness and self-dependence as are necessary for the procuring of food, shelter and clothing; but when the social instinct appears, regard for the opinion and feelings of others is of prime importance. It is this element of courting the good-will of others which lends a value to timidity and makes it, up to a certain point, a social grace; but when regard for what others think occurs in excess and seriously interferes with the social satisfaction and comfort of the individual, it becomes a pathologic factor, and as such, needs study and treatment.

The symptoms can be traced directly to a survival of the old instinct of flight in the presence of possible danger. This desire to be somewhere else is counteracted by the demands of custom to remain present, and when thus forced to stay, one desires to appear as well as possible before one's fellow creatures.

[*To be concluded.*]

RESULTS OF THE RADIUM TREATMENT OF CANCER.[1]

BY

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of Philadelphia, Pa.

Radium was discovered by the Curies in 1898, and it was first used as a therapeutic agent in 1900, for lupus. Its use in the treatment of malignant disease received a tremendous impetus in June, 1903, when Alfred Exner[1] presented two patients cured by radium, before the Royal Society of Physicians, Vienna.

These two cases may well be considered classic and I shall therefore quote a full description from Exner's report:

"The first case was that of a man who had been operated upon three years previously for melanosarcoma of the upper arm, eight months prior to Exner's report recurrent subcutaneous nodules had appeared. In April 1903, Exner began to treat these nodules with radium. He used German radium and applied it to each nodule from 5 to 25 minutes daily. The nodules varied from several millimeters to one and a half centimeters in diameter. All underwent retrogressive change and had disappeared entirely when the patient was shown.

His second patient had been operated upon three times (1888, 1891, and 1897,) for cancer of the oral mucous membrane. In the fall of 1902 there was again recurrence, this time deemed inoperable. This recurrence took the form of an ulcer at the angle of the mouth overlying a hard tumor the size of a hazel-nut. On May 11, 1903, treatment with radium was begun and was continued until June 3. The mass diminished rapidly and could not be detected when the patient was brought before the society (June 26).

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[1] Read before the Medical Society of the Woman's Hospital October 19, 1905.

Exner's report of these cases was modest and conservative, but the lay press soon seized upon his facts and exploited them recklessly. Patients all over the world, in the last stages of malignant disease, clamored for radium, convinced that by its use they could be cured.

In order to determine what results have been obtained to date, I have searched the medical literature carefully. It is replete with optimistic preliminary reports but contains singularly few reports of completed cases. I shall briefly direct attention to all that I have found.

Dr. Goldberg and Dr. London[2] report with photographs one rodent ulcer cured in 2½ months; one rodent ulcer cured in 42 days (well after 3 months.

Abbe[3] reports complete retrograde shrinking of a giant-celled sarcoma of the lower jaw.

J. H. McLeod[4] reports two rodent ulcers cured; one rodent ulcer unimproved. Treatment abandoned for rontgen ray which effected a cure; one inoperable cancer of the uterine cervix treated with no results; one inoperable cancer of the uterine cervix treated with some diminution of the diseased tissue.

Reginald Morton[5] reports one indolent cutaneous ulcer of two years' standing cured by radium. Still healed after three months.

Mackenzie Davidson[6] reports six cases: two rodent ulcers cured (one still healed after five months); one rodent ulcer improved; one mole undergoing malignant degeneration disappeared after several treatments; recurrent malignant nodules unaffected by prolonged exposure; tumor of breast, sloughing and ulceration produced but no cure.

Lichee[7] reports with photographs: one rodent ulcer cured after three months' treatment.

Duncan Bulkley[8] two epitheliomas of the tongue "meltod down one half."

Dr. Courmelles[9] one inoperable uterovaginal cancer symptomatically improved.

Exner.—six cancers of esophagus, improvement in five.

Einhorn.—six cancers of esophagus, improved.

Sir Alan Reeve Manby[10] reports two rodent ulcers cured.

Francis Williams[11] reports three rodent ulcers cured; 14 epidermoid cancers cured; fonr recurrent mammary cancers treated with some diminution of induration.

John McIntyre[12] reports a wart undergoing malignant degeneration, unaffected by radium, improved rapidly under the rontgen ray.

H. Y. Plimmer[13] treated 17 patients with malignant disease, the cases comprising secondary growths, recurrent nodules, deep glands, and primary epitheliomas. He used 30 mg. radium bromid in a vulcanite capsule covered with talc. In every case the effect was negative. No change, no increase. Neither caused nor diminished pain.

To these I can add two cases of my own.

One patient had a small superficial epithelioma in an infantile vagina. I have treated this patient at intervals since May 1904, using 50 mg. French radium bromid of 300,000 activity. As a rule after 14 one-hour treatments the growth separates as a soft slough, but it has invariably recurred after periods varying from one to eight months and the disease has now made its appearance in other parts of the vagina. I am convinced that this patient's life has been prolonged by the use of radium. Both surgical and rontgen ray treatment are rendered impossible by the small vagina.

Recently I have applied radium to a mole undergoing malignant degeneration. The ulceration has healed but since ten one-hour treatments have failed to produce any diminution in size, the patient has consented to operation.

To summarize, there are reported:—13 rodent ulcers cured; 14 epidermoid cancers cured; 1 malignant wart cured; 11 cases of cancer of the esophagus slightly improved; 1 sarcoma cured; 27 carcinomas unaffected; 1 malignant wart unaffected; 1 malignant mole unaffected; 1 rodent ulcer unaffected.

The advantages of radium are its portability, and the ease with which it can be applied and accurately localized. From the foregoing summary we may conclude that it has a distinct, although very limited, field of usefulness in the treatment of malignant disease.

Its action is similar to that of the rontgen ray but much weaker. It is preferable to the rontgen ray in the treatment of small rodent ulcers, and is available for use in inaccessible cavities.

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CLINICAL NOTES.

A PRELIMINARY REPORT OF THE STAINING OF SPIROCHAETA PALLIDA (TREPONEMA PALLIDUM) IN THE TISSUES OF A CASE OF CONGENITAL SYPHILIS.

BY

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(From the Pathological Laboratory of the Western Reserve University.)

The object of this communication is to place on record a case of hereditary syphilis in which *Spirochæta pallida* was found in sections from the various organs.

The cases from which the material was derived was a female infant dead on the fourth day after birth, of acute lobar pneumonia. The mother gives an indefinite, but probable, history of syphilitic infection, contracted after the beginning of her pregnancy. At the autopsy, the infant showed nothing abnormal, except a bilateral lobar pneumonia, involving the greater part of both lungs. All organs were markedly congested, and there was cloudy swelling of the liver and kidneys. Microscopically there is lobar pneumonia, in the stage of red hepatization, due to a short, thick, capsulated bacillus of *Bacillus mucosus* type. Changes suggestive of syphilis occur in the liver. Here there is an increase in the interlobular connective tissue. There are also numerous intralobular islands of round cell infiltration. The spleen shows a well-marked interstitial lienitis. The walls of the larger pulmonary vessels are somewhat thickened.

In smears stained by Giensa's method the liver shows *Spirochæta pallida* in great numbers, often arranged in groups of 10 to 30 in a single field. An occasional organism was found in smears from the spleen. The lungs showed no spirochætæ.

Realizing the importance of attempting to discover some relation of the organism to the histologic changes occuring in syphilis, work was begun a number of months ago toward developing a method which would demonstrate spirochætæ in section. Silver nitrate impregnation suggested itself as a most promising method. In the meantime, there appeared the method of Bertrelli and Volpino[1]. This was essentially a slightly modified van Ermengen method. It is not very satisfactory because of the precipitate produced upon the sections. Then there appeared in No. 1, Tome 20, of the Annales de l' Institut Pasteur, the method of Levanditi. This is a very satisfactory procedure and is the one used in the present case.

In sections of the lung *Spirochæta pallida* occurs in astonishing numbers in the consolidated portions. It is found here in the bronchial epithelium and in the subepithelial connective tissue, in the alveolar septa, and in the exudate within the alveoli and within the bronchi. In the air-containing portions of the lungs, the organisms are much less numerous. A few are seen in the bronchial cartilage.

In the liver, spirochætæ also occur in large numbers, but are not so numerous as in the lung. They are found within the liver-cells, and in the interlobular connective tissue, and in the areas of intralobular round-cell infiltration.

In the suprarenal the organisms are very numerous, occurring usually intracellularly, sometimes between the cells, and in the smaller capillaries.

In the kidneys they are few in number. They are found here within the cells of the convoluted tubules and beneath these cells.

Spleen; Spirochætæ fairly numerous, lying freely among the red corpuscles of the pulp and within the larger stroma cells.

In the heart muscles an occasional organism is seen.

In the interlobular connective tissue of the pancreas a few spirochætæ occur.

In the thymus it requires a lengthy search to find here and there a single organism within a capillary.

RESUSCITATION BY MEANS OF DIRECT MASSAGE OF THE HEART IN CASES OF SYNCOPE AFTER CHLOROFORM ANESTHESIA, AND OTHER CAUSES OF SUDDEN DEATH.

BY
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About a year ago (February, 1905), Dennecke, of Hamburg, injected defibrinated blood, diluted with an equal quantity of artificial serum, into the heart-cavities and coronary arteries with striking result in the case of a decapitated criminal. The experiment was not carried out until twenty minutes after death; but the heart gradually resumed its regular contractions, 80 to the minute, and continued them for three hours. Dennecke concluded, therefore, that it is possible to excite the regular action of the heart at least for a period of two and a half hours after apparent death. Other observers had previously shown by experiments upon animals, which had succumbed to narcosis, that, by direct heart-massage, it was possible to resuscitate them after both respiratory movements and heart action had ceased. Prus, Maag and others succeeded in a similar way in several cases in the human subject, after apparent death from chloroform syncope. The heart resumed its regular action and kept it up for hours, and respiration was restored, but consciousness did not return; and finally the heart action became paralyzed. Dr. Benno Muller[1] of Hamburg, describes in detail the operative procedure. He supplements it by intravenous injection of oxygenated salt solution, which, experiments upon dogs, had shown to have a stimulating affect upon the heart. He also opened the trachea, and carried on artificial respiration. The results were very striking in animals killed by chloroform, and appear to warrant the resort to this expedient in a similar emergency in the human subject. It involves division of the lower third of the sternum along the median line, separating it above by a horizontal cut at the lower border of the third rib, and also at the lower extremity, but leaving it attached to the cartilages of the ribs from the fourth to the seventh, this flap, when lifted up, will expose the pericardium. The latter is opened and two fingers are introduced, so as to make direct compression of the heart at regular intervals. At the same time the oxygenated salt solution is injected into a vein, and artificial respiration is kept up while the preparations are going on. The operation is similar to that which is now recognized as legitimate in case of an incised wound of the heart in which it is necessary to stitch the heart muscle. This has been recently successfully performed by Gibbon of Philadelphia.

Dr. Muller urges physicians to practise this operation and massage of the heart upon the cadaver so that they can quickly and skilfully perform it when the emergency arises.

It is understood that the usual antiseptic precautions are observed as fully as possible, and that the fingers are protected by a rubber glove, so as to avoid infection of the wound. The necessary instruments and dressings can be made into a convenient sized package, and kept sterilized and ready for immediate use. Dr. Muller suggests that this method may be resorted to with the prospect of saving life, not only in cases of chloroform syncope, but also in cases of suffocation and in some forms of death by poison. The expedient is acknowledged to be one of the last resort; and is only warranted by the apparent hopelessness of the case and the definite failure of all other methods of resuscitation.

HYSTERIC HEMIPLEGIA.

BY
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Functional and organic diseases present in a number of cases many common features so that it is sometimes difficult to make a differential diagnosis. This problem is interesting not only from a scientific but also from a practical standpoint, as the prognosis and treatment are diametrically opposite to each other in both affections. From a medicolegal point of view this subject is of the greatest moment, as it is highly important to be able to declare whether the injured person is suffering from an incurable or a manageable malady. Examples of this practical character should therefore be constantly brought forward by those who have the opportunity to observe them. Errors of diagnosis naturally lead to errors in treatment. The latter reason alone, if no other, warrant the report of the following interesting case which came very recently under my observation at the Jefferson Hospital.

Patient S., tailor by occupation, aged 43, was referred by his physician with the diagnosis: "Left hemiplegia due to a cerebral hemorrhage," also the request to treat him, as "the patient had been kept on iodids for two months which resulted in gastrointestional disturbances and no improvement had been obtained from the treatment."

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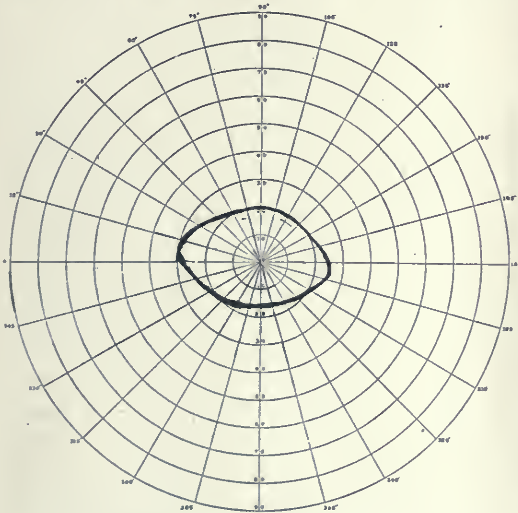
[1] Heft 1., Band 40, of the Zentralbl, f, Bakt. etc., Orig.

A close examination revealed that the patient really presented the typical hemiplegic attitude in station and gait, viz., arm hanging lifeless along the trunk, leg dragging and the body bending towards the non-paralyzed side in walking. The onset of the condition was sudden and accompanied by apparent loss of consciousness (according to patient's statement). Test for the usual symptoms of hemiplegia revealed that while there was complete paralysis of the arm and leg, the limbs were not rigid, the knee-jerk was entirely absent; there was no ankle-clonus no Babinski's sign, no paradoxic reflex. Further examination revealed *absolute* loss of sensation (touch, pain, and temperature) not only over the upper and lower limbs, on the paralyzed side, but also over the abdomen, buttock, left testicle, chest, back, face, forehead, vertex, and occiput on the same side; pulling of the hair on the left caused no pain. Moreover the left half of the tongue, of the pharynx, of the palate, of the mucous membrane of the cheek, of the nostril—were all anesthetic. The special senses were similarly affected; *taste* was entirely abolished on the left half of the tongue; *smell* was also lost in the left nostril; *hearing* was very markedly affected, as a watch had to be placed close to the patient's left ear before the sound could be heard by him. As to the *sight*, the visual field of the left eye was considerably reduced,—and the conjunctiva was totally anesthetic. The anesthesia was strictly limited to the left half of the body so that the line dividing the body in two passes in the middle of the nose, of the sternum, of the linea alba, and even in the middle of the dorsum the penis and scrotum. The motor symptoms *per se* spoke against the organic origin of the paralysis, but the presence of the characteristic sensory disturbances corroborated the hysteric nature of the affection.



Contracted visual field of the left eye.

It is needless to dwell upon the practical significance of such a diagnosis. I shall merely mention that before the patient was sent to the hospital, he was kept during two months on a strictly milk-diet and was ordered to remain in the house and to give up his work. He consequently lost over 15 pounds in weight, besides suffering other inconveniences. Moreover the gradually increasing doses of potassium iodid produced a gastrointestinal disturbance with symptoms of intoxication, so that the patient lost his appetite completely and reduced the amount of milk to a minimum. The prognosis of course was made "as being of a most serious nature"; the family was told "that a permanent degeneration is taking place in the motor tract and that he must change his occupation, as he will never recover the power in his affected limbs". Further comments are not necessary to show the importance of a thorough familiarity with nervous semeiology.

The late Professor von Mikulicz.—A movement is on foot to erect a monument to the memory of the late Professor von Mikulicz, and an International Committee has been formed to collect a fund for that purpose. The head of it is the Heir-Apparent to the duchy of Saxe-Meiningen, and the members for the United States are: W. W. Keen, Philadelphia, W. S. Halsted, Baltimore, J. B. Murphy, Chicago, F. Kammerer, New York. The names abroad also comprise the leading men in the profession and also various notabilities, legal, administrative, military, ecclesiastical, artistic, testifying how wide was his fame and in what high esteem he was held by all who in any degree could appreciate his work. Professor Mikulicz had many friends and admirers in this country who may wish to aid in doing honor to his memory. Contributions for this purpose may be sent to any of the members of the Committee mentioned. We trust the response will be sufficiently full to testify not only to the esteem and affection in which von Mikulicz was held, but also to evince in some degree the appreciation in this country of Germany's splendid achievements in his chosen specialty.

SPECIAL ARTICLE.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.

Proceedings Reported by the Secretary,
WILLIAM J. GIES, Ph. D.,
of New York.

The fifteenth meeting of the Society for Experimental Biology and Medicine was held in the Physiological Laboratory of the New York University and Bellevue Hospital Medical College on Wednesday evening, February 21, 1906. The President, Edmund B. Wilson, was in the chair.

Members present.—Auer, Beebe, Brooks, Calkins, Emerson, Field, Gies, Loeb, L.,[1] Lusk, Mandel, A. R., Mandel, J. A., Meltzer, MacCallum, W. G.,[1] Murlin, Opie, Park, Richards, Salant, Shaffer, Sherman, Torrey, Wallace, Wilson, Wolf.

Members elected.—Walter R. Brinckerhoff, Warren P. Lombard, B. T. Terry, E. E. Tyzzer.

Officers elected.—President, Simon Flexner; Vice-President, E. K. Dunham; Librarian, Graham Lusk; Treasurer, Gary N. Calkins; Secretary, William J. Gies.

ABSTRACTS OF REPORTS OF ORIGINAL INVESTIGATIONS.[2]

On the intermediary metabolism of lactic acid.—A. R. Mandel and Graham Lusk.

Administration of phloridzin to a dog poisoned with phosphorus causes the excretion of dextrose, the mother-substance of lactic acid, and the latter then disappears from the blood and urine. On the other hand lactic acid (Kahlbaum), when given to a diabetic dog, may be completely converted into dextrose.

The primary factor in thrombosis after injury to the blood-vessels.—Leo Loeb.

No uniformity of opinion exists in regard to the essential processes leading to thrombosis. According to some authors thrombosis is essentially due to coagulation of plasma or of cells. Others hold that two factors enter: Agglutination and coagulation. Klemensiewicz and Gutschy expressed the opinion that the primary formation of a fibrinous membrane at the place of injury is necessary.

We find the same diversity of views in regard to the so-called first coagulation of arthropod blood, which as the author has already shown experimentally, is identical with thrombosis in that animal. That no explanation of thrombosis has found general recognition so far is due to the fact that microscopic examinations alone, based on staining reactions, are entirely inadequate for a decision of this question. Almost all previous work rests mainly on morphological investigation.

Sahli's work, however, forms an exception. He found that after injection of leech extract into the circulation of a rabbit, thrombi no longer formed around foreign bodies introduced into the blood-vessels. He concluded quite logically that his results prove the correctness of the view of Hanau and others, namely, that thrombosis is a process of coagulation. The results of his experiments are directly opposed to the fact repeatedly pointed out by the author, viz., that agglutination of blood plates occurs in birds and in mammalian blood outside of the body in conditions under which coagulation is entirely excluded, as in phosphorus poisoning, also in hirudin blood, and in bird's blood collected according to Delezenne's method.

In order to clear up these discrepancies the author carried out experiments on a relatively large number of animals. In arthropods, and especially in Limulus he found in various experiments that the collection of blood cells around the foreign body, which leads ultimately to the formation of hyaline thrombus, was due to a primary process of agglutination and that coagulation processes could be entirely excluded. The same applies to the extravascular coagulation of Limulus blood.

In birds and dogs the blood was made temporarily incoagulable through injections of hirudin or pepton. In a number of experiments not only was the increase in the coagulation-time of the blood in the injected animal observed, but the blood was also tested in regard to its reaction toward the tissue coagulins which accelerate the coagulation of the blood. The blood-vessels were injured in different ways and were later examined microscopically. In the large majority of cases serial sections were made of each injured blood-vessel; 7 geese were used for hirudin injections, including the controls; 38 blood-vessels of 19 dogs were examined after hirudin injections (controls included); 25 blood-vessels of 12 dogs were examined after pepton injections (controls included).

The following conclusions may be drawn from the results obtained:

In invertebrates as well as vertebrates an agglutination of blood-cells or of blood-plates may take place around foreign bodies or at the place of injury of the vessel-wall. This agglutination can be present without any simultaneous or preceding formation of fibrin being possible. The formation of such agglutination-thrombi corresponds to the clumping of the same cellular elements outside of the body, where the agglutination can take place without being accompanied by any coagulative process.

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[1] Nonresident.

[2] The authors of the communications have written the abstracts. The secretary has made occasional abbreviations in some of them.

In birds the injection of hirudin does not materially alter the readiness with which a thrombus is formed. In dogs, on the other hand, it is very probable that injections of hirudin delay or may sometimes prevent the formation of agglutination-thrombi. The effect, however, is not directly due to the inhibition of the coagulation of the blood, but probably to changes in the blood which will still have to be determined.

Granula and ameboid movements in the blood-cells of arthropods.—Leo Loeb.

If one observes a drop of blood of the Limulus, or of other arthropods, under the microscope immediately after it has left the body, an interesting phenomenon is seen. The large majority of the cell granula become smaller and soon disappear. The cells which were at first oval become round and send out hyalin protoplasm and pseudopodia. Movements of the protoplasm may be observed for a long time, but ultimately they cease, when the cells are spread out entirely and in this condition the cells gradually die.

It has been the author's aim to determine the conditions which inhibit or accelerate this apparently spontaneous dissolution of the cell granula. From the results of those investtigations, which cannot be given here in detail, it follows that the fate of the granules of arthropod blood-cells depends upon certain mechanical conditions, and that the apparently spontaneous dissolution of cell granula can to a large degree be inhibited by avoiding certain mechanical irritations of the cells. The changes taking place in the granules are a very fine indicator of certain mechanical or chemical alternations in the environment of the cells. Such changes are determined by the character of the foreign bodies with which the cells come in contact, lipoid substances being especially favorable for the preservation of the granules. The temperature, osmotic conditions, the reaction of the medium in which the cells are suspended, influence the granules in a definite way. Furthermore, the presence of certain electrolytes is necessary for the preservation of the granules in isotonic, hypotonic, and, with the exception of sugar solutions, also in hypertonic solutions. The cell granules are dissolved in isotonic solutions of non-electrolytes. Different electrolytes exert a different, specific influence.

We see, moreover, that certain substances may dissolve cell granules without enabling the protoplasm to carry out ameboid movements, but in the large majority of cases a certain parallelism is observed between the fats of the granules and the ameboid movements of the cells. Whether this parallelism is due to a direct or merely to an indirect causal relation cannot at present be determined with certainty. It seems not unlikely that the ameboid movements, the spreading out of the cells and the dissolution of the granules are caused by certain metabolic changes which are induced in each instance by similar conditions. (The blood cells of Limulus are a favorable object for demonstrating the effect of mechanical conditions upon blood-cells leading to thrombosis and they might be used to advantage in a course of experimental pathology as given by the writer in the University of Pennsylvania.)

On a course on the pathological physiology of the circulation.—W. G. MacCallum.

In general in the teaching of pathology the anatomical alterations produced by disease are dwelt upon and little attention is devoted to the detailed study of the alterations in function produced by these diseases. A course was arranged during the past year at the Johns Hopkins University to cover this ground and half of the new laboratory of experimental medicine was planned to give facilities for this work.

The aim of the course was to reproduce experimentally such diseased conditions as are seen by the students in the wards of the hospital so that they might be studied by the aid of any or all of the methods at the command of the physiologist and of the pathologist. The study of the anatomical changes which are usually found in such conditions was carried on together with these experiments.

It was planned to attempt the study of only a limited portion of the subject each year, and during the past term the diseases of the circulatory system have occupied the attention of the class. Next year it is intended to study the digestive system in a similar way.

Only those lesions were produced in which experimental study would actually be of value—thus in the case of the pericardium, while various infections might have been used to give rise to an exudate, the blood-pressure relations, changes in heart-beat, heart-sounds, etc., were studied during the distention of the pericardium with water.

Similarly it was thought sufficient to study mechanical injuries of the heart-valves rather than to attempt their production by the aid of bacteria. Therefore, while the actual lesions were studied in the museum and histologically, the injuries to the valves were produced by cutting the valves with a special blunt hook with a knife edge on the inner side of the curve. The pressure relations were then rendered visible to the students by the curves traced in inks of different colors from cannulas inserted at various points in the circulation. Stenoses were produced by the application of a screw clamp about the orifice of the heart concerned and tracings taken in a similar way. These experiments are similar to those described by v. Basch and Moritz but they are not subject to the criticism that they are made on a model of glass and rubber.

Murmurs could be heard and traced very accurately by the use of a stethoscope with very small bell which could be applied directly to the ventricles or along the vessels. Thrills could be felt and the dilation and excessive activity of any portion of the circulatory apparatus directly observed. In this way there were produced and studied aortic stenosis and insufficiency, mitral stenosis and insufficiency, pulmonary stenosis, and tricuspid stenosis and insufficiency.

Lesions of the myocardium were simulated both by the mechanical destruction of the muscle substance and by the injection into it of such coagulating substances as alcohol, and the effects studied by the same method. Obstruction of various branches of the coronaries was also studied in detail.

The effect of the closure of various blood-vessels was demonstrated as well as the effect of the dilation and contraction of capillaries in different regions, and the character of the capillaries of the lungs in this respect was studied. The mode of obliteration of blood-vessels after ligature and the accommodative changes which take place when the blood-supply is diminished and when collateral circulation is demanded were also considered.

The short course ended with the study of aneurysm, arteriosclerosis, and the experimental formation of thrombi and of infarcts on the introduction of foreign bodies as emboli.

The advantage which accrues to the student seems to be chiefly in his obtaining an intimate and first-hand knowledge of all the details of processes commonly seen clinically but about which much theorizing must be done in the wards.

On the blood-pressure relations in mitral insufficiency and stenosis.—W. G. MacCallum and R. D. McClure.

In the course of experiments such as were described in the preceding paper, the blood pressure in various portions of the circulatory apparatus was recorded after mitral insufficiency had been produced by introducing a curved knife hook into the left auricular appendage and cutting some portion of the mitral valve—a systolic murmur could then be heard especially loud over the auricle and along the pulmonary veins with usually a thrill felt over the auricle. Interest attaches especially to the exact explanation of the hypertrophy of the right ventricle since, as Gerhart points out, there is an obvious obstruction to the flow of blood through the mitral orifice into the ventricle.

This is true only when the left ventricle at once accomodates itself to the condition by dilating to receive the excessive amount of blood which accumulates in the auricle, that is, the amount thrown into it from the right ventricle plus the amount regurgitated and then succeeds in expelling it all. Unless this happens the auricle is unable to empty itself and a condition arises in which the amount of blood circulated is smaller than normal, the remainder being stagnant in the pulmonary circulation and the right ventricle is found to be driving a uniformly smaller amount of blood into a cavity (the pulmonary circulation) in which there is some stagnant blood and into which more is forced from the left ventricle during systole. The elevation of pressure from this stagnation need not be great and in the experiment where these conditions seem to prevail the pressure in the pulmonary is not much elevated. Ordinarily, however, the left ventricle dilates to receive the excessive blood, regurgitates some and discharges something near the normal amount into the aorta. Then the right ventricle attempts to discharge into the pulmonary circulation the same large amount at the moment when the stronger left ventricle is also forcing into that cavity the amount constantly regurgitated. The pulmonary pressure is again not much elevated—not more than before but the amount of blood in the general circulation is nearer the normal. It is quite true, as Jurgensen supposed and as Gerhart also supposed, that the impulse from the left ventricle is directly felt by the right—even the pulsation of the left ventricle communicated through the imperfect valve to the left auricle is transmitted unchanged to the pulmonary arteries, just as the pulsation of the right ventricle is transmitted unchanged to the pulmonary veins. Since the right ventricle contracts simultaneously with the left this direct beat of the two ventricles against each other does probably account in part for the hypertrophy of the weaker right ventricle. It may be shown to occur by inserting a cannula into the cut end of the pulmonary artery toward the lung so as to receive the blood through the lung where it is found that on the production of mitral insufficiency the pressure in that manometer rises and the curve shows high pulsations synchronous with those of the ventricle.

Mitral stenosis was produced by means of a clamp or by a coarse suture passed through the heart and about the mitral ring. The pressure is seen to rise very high in the pulmonary circulation but because of the smaller amount of blood left to circulate there it is lowered throughout the systemic circulation.

Paramecium aurelia and mutation.—Gary N. Calkins.

The ordinary species is *Paramecium caudatum;* superficially, it resembles *P. aurelia*. The latter differs from the former in smaller size, in rounded instead of attenuated posterior end, and in the possession of two instead of one micronucleus. The last is generally regarded as the most important difference between the two species. In March, 1905, a pair of conjugating *Paramecium caudatum* were isolated from a culture in an epidemic of conjugations. The ex-conjugates had all of the characteristics of *P. aurelia*. One died before many generations in culture, the other is still living and is now in the 346th generation. This one retained the characteristics of *P. aurelia* until about the 45th generation after conjugation, when it lapsed again into the *P. caudatum* form, with one micronucleus, and other characteristics of *P. caudatum*. The latter characters are still maintained.

The observation indicates one of two things. Either this is an interesting case of mutation of species with lapse into the parent form after several generations, or the specific characteristics are inadequate and *P. caudatum* and *P. aurelia* are but variants of one species. The latter is the more reasonable hypothesis and on grounds of priority, the common forms of paramecium should be called *Paramecium aurelia*.

Physiologically the form known as P. caudatum is more vigorous in culture than is *P. aurelia*. During the time that the cultures were in the *P. aurelia* phase the division rate was relatively low (four divisions in five days), but soon after the change to the caudatum form the division-rate rose to two and a half divisions per day on the average for forty days, which is the highest rate on record. With this physiological difference there was a marked difference in the relative volumes of micronucleus and cell-body but no difference in the relative volumes of macronucleus and body.

Experiments with some saline purgatives given subcutaneously.—John Auer.

In spite of the large amount of work which has been done regarding the effect of subcutaneous and intravenous injections of saline purgatives, investigators are still in disagreement. To mention only the most recent writers, MacCallum[1] claims that "*all these salts which act as purgatives when introduced into the stomach or intestines have the same action when injected subcutaneously or intravenously.*" Eckhardt[2] on the other hand, states that "Die Mittelsalze haben bei unseren Haustieren keine abfuehrende Wirkung" and that "Im Gegentheil wirken sie, auf diesem Wege einverleibt, hæufig verstapfend." Both authors used approximately the same dose, injected the same salts subcutaneously and intravenously and yet arrived at diametrically opposed results.

In an extensive series of experiments already published Dr. Meltzer[3] and the author have shown, among other things, that the subcutaneous injection of magnesium sulfate does not produce purgation. In view of the peculiar properties of magnesium salts the investigation was extended to some of the other saline purgatives.

In the present investigation rabbits averaging 1500 grams, were used and the salts chiefly employed were sodium sulfate and sodium phosphate. With sodium sulfate in four percent and 25 percent solution, injected subcutaneously in 15 cc. doses, no purgation was caused in any of the experiments. Five or six hours after the injection, the feces passed often weighed less than five grams and were of normal consistency and form. Only rarely did the total 24-hour output exceed 15 grams and the pellets were moderately hard, dry, and well formed. Similar results were obtained when 4.5 percent sodium phosphate in 15 cc. doses was injected subcutaneously. Both salts caused no purgation but rather a moderate degree of constipation.

The action of sodium sulfate and sodium phosphate on intestinal peristalsis was also studied. The intestines of rabbits anesthetized by morphin were observed with and without a saline bath. The subcutaneous injection of sodium sulfate and sodium phosphate caused a definite increase in the pendular motions of the small gut, especially of the duodenum. These movements, however, did not seem of a character to cause the evacuation of unformed feces, an impression which was proved by the results already reported. Increased intestinal movements and purgation are therefore by no means synonymous terms; the two may possibly even be independent of each other. Leubusher,[1] for instance, found that 5-10 grams of sodium sulfate or magnesium sulfate injected into the stomach of rabbits produced in the majority of cases no increase in the frequency or intensity of peristalsis.

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[1] J. B. MacCallum, Amer. Jour. of Phys. 1904, Vol. X, p. 101.

[2] Eckhardt, Inaug. Dissert, Giessen, 1905.

[3] Meltzer & Auer, Amer. Jour. of Phys., Vol. XIV, 1905, p. 366.

The experiments which have been briefly reported lead to the conclusions first, that the subcutaneous injection of sodium sulfate and sodium phosphate does not produce purgation in rabbits, and secondly, that the pendular movements of the small gut are moderately increased.

The effects of extra stimuli upon the heart in the several stages of block, together with a theory of heart-block.—Joseph Erlanger. (Presented by S. J. Meltzer).

This research was undertaken primarily with the object of testing the statement made by Hering that the absence of a compensatory pause following an extra stimulation of the ventricles of the warm-blooded heart suffices to prove that the ventricles are beating independently of the auricles.

The author's experiments on the dog's heart have shown that in partial heart-block, as well as in complete, extra systoles of the ventricles are not followed by compensatory pauses. This results from the tendency for the same number of auricular beats to elapse between the extra contraction and the next following natural contraction as intervene between two natural ventricular beats in any stage of partial block. The following may be taken as an average example: If the auriculoventricular rhythm is 3:1, a ventricular extra cycle will last through any part of such auricular cycle as may have been unfinished at the moment of stimulation, plus two more auricular cycles if more than one half of the first auricular cycle was unfinished, or plus three or more auricular cycles if less than half of the first auricular cycle was unfinished.

In partial heart-block extra systoles of the auricles do not cause contractions of the ventricles excepting, occasionally, when such extra systoles fall close to the end of a ventricular cycle; and extra contractions of the ventricles never cause contractions of the auricles.

The irritability of the ventricles in partial and complete heart-block is not reduced but rather it is increased over that which obtains in the normal heart. Furthermore, in each ventricular cycle of partial and complete heart-block the irritability of the ventricles probably increases until they pass into the refractory state which develops with their contraction.

In order to determine the significance of these results, a strip of terrapin ventricle was arranged so that rhythmic stimuli as well as extra stimuli could be thrown into either end as desired. The strip was suspended over a Gaskell's clamp in such a way that the impulses passing through the strip could be blocked either partially or completely at its middle. In many such experiments it was found that when the strip would beat apparently normally from end to end in one direction, a partial or complete block would sometimes be unmasked when the strip was made to beat in the opposite direction. Such behavior is undoubtedly due to the fact that the impulses generated in one end of the strip are more efficient than the impulses of the other end. With a strip showing these reactions it is possible to repeat all of the phenomena that can be obtained from a mammalian heart in block produced by compression of the auriculoventricular bundle.

These facts suggest the following theory of heart-block: Clamping the auriculoventricular bundle reduces the efficiency of the cardiac impulses that reach the ventricles. With a certain degree of pressure the impulses become subminimal with respect to the irritability of the ventricles. Such an impulse would therefore fail to elicit a contraction of the ventricles. The next following auricular impulse would be no stronger than the preceding one, but in the interval the irritability of the ventricles has increased to the extent that the weakened auricular impulse now acts as an efficient stimulus. In this state of affairs the rhythm would be 2:1. A further reduction in the efficiency of the auricular impulse would give higher degrees of partial block and finally complete block. With this theory as a basis it becomes possible to explain all of the important phenomena of heart-block.

On the nature of the reflexes controlling the successive movements in the mechanism of deglutition.—(From the Rockefeller Institute for Medical Research). S. J. Meltzer.

The entire act of deglutition consists of a series of consecutive movements beginning with the elevation of the mylohyoid muscle of the floor of the mouth, progressing through pharynx and esophagus and terminating with the contraction of the cardia at the entrance of the stomach. The progress of these movements is surprisingly well regulated and stable. Each section of this canal enters into the peristaltic movement invariably at a given interval after the beginning of the swallowing. The time allowed for the entire course differs with each species of animal; it is about 7 seconds for the human being, about four seconds for the dog, and about 2 seconds for the rabbit.

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[1] Leubusher, Virch. Arch., Vol. 104, p. 104.

It was early recognized that these stable relations were under the control of a reflex mechanism. That the contractions could not be caused by a direct stimulation of the muscle coat of the esophagus by the passing food was proved by the fact that there is no peristaesis when the vagi are cut. In a series of experiments carried out by Ludwig and Wild at about the middle of the last century, it was found that ligation or transverse section of the esophagus prevents the further progress of the peristalsis to the lower segment. They drew the conclusion that the reflex is of a local nature, that is, that the food or drink while passing the esophagus sends up from each transversed section a sensory impulse which causes a reflex contraction of that section. Some twenty-five years later, however, A. Mosse made similar experiments and obtained opposite results; namely, that after ligating, transverse cutting, and even after removing a whole ring of the esophagus, the peristalsis once begun would appear also in the lower end of the esophagus. Similar observations were made by Kronecker and the author about 25 years ago on the cardia of rabbits. Even after removal of a large part of the esophagus the cardia would contract in due time after the beginning of swallowing. These experiments seem to permit only one conclusion, namely, that there are no local reflexes, that is, that the food while passing the esophagus does not send up sensory impulses to the center of deglutition, but that there is only one sensory impulse sent up at the beginning of the act of deglutition which spreads slowly within the center and sends down consecutively motor impulses to the consecutive sections of the deglution path.

A few years ago the author reinvestigated the subject. There was a direct contradiction in point of facts between Ludwig and Wild on one hand, and Mosso and Kronecker and the author on the other; it seemed strange that Ludwig, the master physiologist, should have failed to see what appeared so easy to observe. An analysis of the methods employed in both series of investigations led to the discovery of the cause of the discrepancies in the results. The animals of Ludwig and Wild were in deep anesthesia during the experiments, while those of Mosso were out of the anesthesia again, and the animals of the author's experiments were only under slight anesthesia. The author tested this point on a few animals and found the surmise confirmed. When the animals were in deep anesthesia no peristalsis passed beneath a ligature, while it ran down the entire esophagus as soon as the animals were out of the anesthesia. This means that in normal animals the mechanism of the deglutition is carried on by a reflex with only one initial sensory impulse, the impulse travelling further within the center, while in anesthetized animals the progress of the peristalsis was carried on by a chain of local reflexes.

On recently reinvestigating this problem, the author again found that this chain of local reflexes exists also in the non-anesthetized, normal animals when the first normal stimulation is avoided. The experiments were made on rabbits. A cannula was tied in the upper end of the esophagus. When any indifferent liquid was not introduced by the mouth but injected directly into the esophagus, a peristaltic wave ran down the esophagus terminating in a contraction of the cardia just as after a normal deglutition. When the esophagus was ligated the wave stopped at the ligature. This happened whether the animal was deeply anesthetized or was awake. That the wave of peristalsis was a reflex phenomenon, and not simply due to the mechanical effect of the injections was proved by cutting the vagi. In this case injections simply filled up the esophagus without causing any peristaltic wave and without any contraction of the cardia. Better than cutting was the painting of the vagi with cocain or with magnesium sulfate. In these cases the nerves could be washed out again and the experiment could be repeated many times. A similar wave of peristalsis was obtained when the liquid was injected through the cardia upward through a catheter. The peristalsis began at the spot above the last drop of liquid. The wave always ran towards the stomach and against the stream even if the animal was kept head downward. The peristaltic wave could be produced also by injecting only air into the esophagus either from above or from below. This explains a fact which the author recorded 23 years ago, namely, that each act of "belching" is followed by a peristaltic wave of the esophagus.

The author found that this chain of local reflexes is very resistant to anesthesia; it disappears at about the same time the lid reflex is abolished, and returns as soon as the ether is discontinued.

The experiments demonstrate that the function of deglutition is provided with two sets of reflex mechanisms. One mechanism has only one initial afferent impulse which travels within the center independently of any further aid from the esophagus; it is very sensitive to anesthesia and we may call it a higher reflex. The other is a lower reflex, consisting of a chain of local reflexes which are very resistent to anesthesia.

The complexity of their mutual relations furnishes suggestive problems for future investigations.

The enzymes of inflammatory exudates. A study of the enzymes concerned in inflammation and their relation to various types of phagocytic cells.—Eugene L. Opie.

The leucocytes of an inflammatory exudate produced by injecting aleuronat into the pleural cavity of dogs digest proteid both in an alkaline and in an acid medium (uncoagulable nitrogen being estimated by the Kjeldahl method). The following evidence shows that two enzymes are present:

(a). Cells dried after treatment with absolute alcohol and ether and then reduced to a powder digest actively in an alkaline medium (0.2 percent sodium carbonate) have almost completely lost the power of digesting in an acid medium (0.2 percent acetic acid).

(b). By subjecting washed cells of a sterile inflammatory exudate to varying degrees of heat power to digest in an alkaline and in an acid medium is lost at a temperature above 70° C., at temperatures between 55° and 65° the power to digest in an alkaline medium is unimpaired but in an acid medium it is much diminished.

(c). With cells of exudate removed from the pleural cavity twenty-four hours after the injection of aleuronat digestion is very active in an alkaline medium, but less active in an acid medium. At the end of from three to five days power of digesting in an alkaline medium is diminished or unchanged, and the acid digesting power increased.

At the end of twenty-four hours after injection of aleuronat polynuclear leucocytes with fine granulation are predominant and from 85 to 90 percent of the cells present. These cells, according to observations previously reported contain a ferment which digests in an alkaline medium. At a latter stage of inflammation when large mononuclear phagocytic cells are predominant, the power of digesting in an acid medium is increased and bears a relation to the proportion of mononuclear phagocytes. If washed red blood corpuscles of the rabbit are injected into the pleural cavity of the dog, at the end of twenty-four hours an exudate is produced very rich in large mononuclear cells, and in correspondence the power of the cells to digest in an acid medium is greater than that of the twenty-four hour aleuronat-exudate.

Lymphatic glands in the neighborhood of the inflammatory exudate, the substernal glands in the case of the pleura, contain at the end of three or more days in greater number larger mononuclear phagocytes similar to those found in the exudate at the same stage. Emulsions made from such glands digest in an acid medium and little if at all in an alkaline medium. The digesting power of these glands (measured in cubic centimeters of 1-10 N. sulfuric acid) is constantly greater than that of glands such as the mesenteric distance from the seat of inflammation.

	Exp. 1	Exp. 2	Exp. 3	Exp. 4
Substernal Glands	7.6 cc.	11.45 cc.	11.95 cc.	12.2 cc.
Mesenteric Glands		9. 9 cc.	8.75 cc.	9.0 cc.
Time after injection	1 day	3 days	4 days	5 days

The difference in degree of digestion are more significant when it is recalled that the activity of other proteolytic enzymes has been shown to vary in a proportion equal approximately to the square root of the quantity of the enzyme.

The phagocytic cells of an inflammatory exudate contain two enzymes. One of these ferments characterized by its power to digest proteid in an alkaline medium is contained in the polynuclear leucocytes with fine granulation, and since it is derived from the bone marrow may be designated *myelo-protease.* The second ferment characterized by its power to digest only in an acid medium, in this respect resembling the autolytic ferments of other organs, is contained in the large mononuclear cells of the exudate and is increased in lymphatic glands adjacent to the seat of inflammation; it may be designated *lympho-protease.*

Experimental myocarditis; a study of the histological changes following instravenous injections of adrenalin.[1]—Richard M. Pearce. (Presented by Eugene L. Opie.)

During a recent investigation[2] of the lesions occurring in the aorta of the rabbit as the result of repeated injections of adrenalin, the heart muscle, in a few instances in which it was examined, was seen not infrequently to be the seat of very definite degenerative lesions and occasionally also of proliferative changes. The association of such conditions with an experimental vascular lesion suggested the possibility of producing experimentally a chronic myocarditis analogous to that seen not infrequently in man. A second series of experiments was therefore inaugurated. In these an attempt has been made to study the sequence of the changes and to determine to what extent they are due to the direct action of adrenalin and to what extent secondary to the arterial lesions.

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[1] Conducted under a grant from the Rockefeller Institute for Medical Research.

[2] Pearce, R. M., and Stanton, E. McD. Experimental Arteriosclerosis, The Journal of Exp. Med., 1906, VIII, 74.

The same methods have been followed as in the earlier experiments except that the initial dose was placed at one-tenth of a cubic centimetre and rapidly raised to five-tenths, and occasionally higher. As the earlier experiments, just mentioned, had shown that ten to twelve injections of adrenalin were sufficient to produce well marked arterial lesions, the injections in this series with a few exceptions were thus limited and the animals were then allowed to remain without further treatment for periods varying from one to three weeks. The animals dying during the course of the injections furnished sufficient material for the study of early degenerative changes.

Results.—Thirty-six rabbits were injected. These may be divided into two groups: The first group including thirteen animals which died during the period of injection and a second group of twenty-two animals which received from seven to fifteen injections and were killed at various intervals thereafter. The first group represents animals receiving from one to five injections and of which none died later than the tenth day. All animals dying in this stage succumb apparently to circulatory and respiratory disturbance and present at autopsy acute dilation of the heart, œdema and congestion of the lungs, and occasionally hemorrhages from the serous and mucous membranes or in the interior of organs. No macroscopic lesions of the aorta are demonstrable. When death follows the injection within a few minutes the cardiac dilation, especially after the fourth or fifth injection, is extreme.

The following histological description of an animal dying after the fifth injection is typical of the degenerative lesions of this period. Sections from three levels of the heart, show general edema and extreme disintegration of the muscle fibers. On both cross and longitudinal section the latter are seen to be irregularly swollen, granular, without striation, and not infrequently hyaline. The nuclei are swollen and frequently surrounded by a zone of œdema. In many fibers with extensive vacuolization of the protoplasm the nucleus cannot be seen. About such fibers small accumulations of mononuclear leucocytes are occasionally present and in some instances foci of epithelioid cells. In areas of extreme degeneration the outlines of the muscle fibers as seen on cross section are indistinct and the picture is that of a uniformly granular mass with regularly placed lightly staining chromatic rings. These various changes affect the papillary muscles also. No changes in the vessels of the heart are demonstrable.

Such early degenerative changes cannot be secondary to lesions of the larger vessels for in this series none of the animals exhibited macroscopic changes in the aorta and in but three were degenerative changes evident microscopically.

Proliferative Changes.—Of the 22 animals surviving seven to fifteen injections all but three showed degenerative changes in the myocardium though seldom of the severe grade observed in the above description. In twelve, more or less definite new connective tissue formation was evident. This new tissue was present, in some hearts, as more or less focal accumulations of fine connective tissue about individual hyaline or granular fibers or about small groups of such fibers. In others a diffuse arrangement of new tissue was demonstrable in considerable areas of the myocardium and in two cases a very severe and diffuse fibrous myocarditis existed. The new tissue as a rule was most abundant about blood vessels but had no relation to the sub-epicardial tissue or to the endocardium. It was very prominent in the papillary muscles. All parts of the ventricle suffered though if any difference existed the lesions were more severe at the apex. Focal accumulations of lymphoid cells were not prominent in the more chronic lesions though occasionally seen in the earlier conditions. No suppuration or other evidence of infection was seen at any time; the lesion apparently was a pure connective tissue proliferation following degeneration of muscle fibers. Control observations on a large number of animals reveal no evidence of such a condition of the heart occurring spontaneously. The fibrous changes in the myocardium appear to be independent of the vascular lesions for in but one case were the coronary arteries involved and in but six were lesions of the aorta present. This experimental lesion therefore is not analagous to the myocarditis associated with arterial disease in man.

There is but little evidence to support the theory of a direct toxic action of adrenalin on the heart muscle. Indeed the limitation of degenerative lesions to the heart and larger blood vessels and their practial absence in all other tissues contraindicate a toxic action and point to some influence of a mechanical nature affecting these structures alone. It is possible to conceive of a temporary ischemia of terminal vascular territories due to the direct action of the drug upon the smooth muscle cells of the coronary arterioles and lasting a sufficient length of time to cause some interference with the nutrition of the affected areas. From physiological experiments this period would appear to continue about ten to fifteen minutes. If to this we add the increased contractile effort necessary to overcome the greatly augmented intravascular tension we have factors sufficient to explain the degenerative lesions of the early experiments. The heart-muscle under conditions of poor nutrition is pushed to its extreme power and dilation results with injury of single fibers or groups of fibers. This injury is therefore due in part to nutritive and in part to mechanical disturbance.

With the exception of the slight focal increase of connective tissue described by several investigators, as a rare result of repeated injections of diphtheria toxin, the only form of fibrous myocarditis mentioned in the literature of experimental lesions of the heart is that following ligation of the coronary arteries. To this lesion that produced by adrenalin is somewhat analogous.

That some of the more usual forms of fibrous myocarditis in man which are difficult of explanation may be due to circulatory disturbances of the same general nature as those caused in the rabbit by adrenalin cannot be denied. It is to these only that the results of this experimental investigation appear to have any relation.

Stable and detachable agglutinogen of typhoid bacilli.—B. H. Buxton and J. C. Torrey.

By heating an emulsion of typhoid bacilli to 72° C. for half an hour a detachable agglutinin may be separated from the bacilli. This may be obtained in the filtrate on passage through a Berkefeld filter. Rabbits, which have been inoculated on the one hand by this filtrate and on the other by the heated bacilli, which have been thoroughly washed, show specific differences in their serums, as regards agglutination. The animal inoculated with the washed bacilli or stable agglutinin, produces a serum which agglutinates normal typhoid bacilli very slowly and with the formation of fine clumps. In contrast to this, the filtrate containing only detachable agglutinin gives rise to serum which clumps normal typhoid bacilli rapdly and with the formation of large flocculi.

Absorption experiments, furthermore, show that the *s* or stable agglutinin and the *d* or detachable agglutinin are distinct in character. For the heated and washed bacilli absorb nothing from the filtrate serum, but all the agglutinin for normal typhoid bacilli from the bacillu serum. On the other hand the filtrate absorbs nothing from the bacillus serum, but all the agglutinin from the filtrate serum.

It has also been determined that the substance in typhoid bacilli which gives rise to precipitins for filtrates of typhoid cultures is split off from the bacilli, together with the detachable agglutinums. The possibility, further, suggests itself that the *d* agglutinin and the precipitin in a typhoid serum are identical.

The effect of alcohol on hepatic glycogenesis. Preliminary communication.—William Salant.

In view of the current tendency to regard alcohol as a food it seemed desirable to make a study of its effect on hepatic glycogenesis for if alcohol can replace the carbohydrates in food it ought to spare the carbohydrate radical of the tissue proteins. An accumulation of glycogen in the liver after exclusive feeding with alcohol might therefore be expected. Indeed the work of Nebelthan[1] who found 1.34 to 3.51 percent of glycogen in the liver of the hen after the administration of 10 cc. per kilo of 96 percent alcohol on the seventh day of starvation would lend support to this view.

This suggestion was put to an experimental test. The investigation was carried out entirely on rabbits which were fed exclusively on alcohol for periods of 4 to 6 days. Alcohol was given by mouth by means of a stomach tube in amounts varying between 3 to 9 cc. per kilo per dog diluted to 30 and 60 percent. As controls were used rabbits starved for an equal number of days as the alcohol rabbits. Instead of alcohol, water was given by mouth with a stomach tube. At the expiration of the periods named, the rabbits were killed under ether anesthesia and the liver examined for glycogen according to Pflüger's[2] shorter method. The amount of dextrose obtained by hydrolysis of the glycogen was determined by Allihn's method. Later in the course of the investigation for reasons of economy of time the amount of copper was determined volumetrically by the iodin method instead of gravimetrically as originally recommended by Allihn.

The results at this stage of the investigation show that in rabbits fed exclusively on alcohol (10 cc. 30 percent per kilo or 12 cc. 60 percent per kilo daily for 4 or 5 days) there is no accumulation of glycogen in the liver, which shows that glycogen is not formed in the liver of rabbits when fed on alcohol alone. Previous to starvation or alcohol feeding these rabbits were fed on oats. As the formation of glycogen *de novo* does not take place then under the influence of alcohol a number of experiments were carried out to ascertain whether alcohol retards the disappearance of glycogen from the liver during starvation. To test this point rabbits were brought up to a maximum of glycogen accumulation by feeding carrots for 3 days. Alcohol 10 cc. 30 percent per kilo was then given in the way stated for 5 or 6 days. As may be seen on inspecting table II the results are negative. In one experiment only was an appreciable amount of glycogen found. In the rest of the experiments the amount of glycogen obtained in alcohol fed rabbits was about the same as in the controls. In this connection it might be mentioned that the amount of glycogen found in rabbits killed after feeding carrots for 3 days varied between 4 and 7 percent. The results of experiments on rabbits fed on alcohol, 10 cc. 30 percent per kilo daily, for 4 days were likewise negative. Larger quantities of stronger alcohol were then tried. The administration of 12 to 15 cc. of 60 percent alcohol per kilo daily for 4 days after bringing the rabbits up to a maximum of glycogen accumulation by feeding carrots was not accompanied by a retardation of the disappearance of glycogen from the liver. In the two rabbits examined the liver was glycogen free. It is safe to conclude, therefore, that alcohol when given in large amounts to healthy rabbits does neither cause the formation nor retard the disappearance of glycogen from the liver.

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[1] Nebelthan. Zeitschrift für Biologie Vol. 28, p. 146.

[2] Pflüger. Archiv. für die gesammte Physiologie 1902, XCIII, p. 163.

TABLE I. AMOUNT OF GLYCOGEN IN THE LIVERS OF CONTROL RABBITS.

Exp. No.	Rabbit Wt.	Liver Wt.	Feeding Before Starvation.	Starvation Period.	Treatment During Starvation.	Glycogen Percent.
1	820 gms.	22 gms.	C. H. O.	4 days	Water given by Stomach Tube	None
2	1320 "	41 "	" " "	5 "		"
5	1230 "	27 "	Carrots 3 days	5 "		0.139
6	970 "	22 "	" "	5 "		0.148
8	1370 "	42 "	" "	6 "		0.043
10	1265 "	38 "	" "	4 "		0.127
11	1470 "	53 "	" "	4 "		None

Table II. Amount of Glycogen in the Livers of Rabbits After Feeding Alcohol.

Exp. No.	Rabbit Wt.	Liver Wt.	Feeding Before Starvation.	Starvation Period.	Alcohol Per Kilo. Daily.	Glycogen Percent
1 A	1120 gms.	48 gms.	C. H. O.	4 days	10 cc 30 percent	None
2 A	1100 "	35 "	" " "	5 "	10 cc "	"
5 A	1100 "	44 "	Carrots 3 days	5 "	10 cc "	0.8
6 A	1300 "	48 "	" "	5 "	10 cc "	0.28
9	1280 "	47 "	" "	6 "	10 cc "	Trace
7 A	1500 "	53 "	" "	6 "	10 cc "	0.083
9 A	1270 "	43 "	" "	6 "	10 cc "	Trace
10 A	1470 "	53 "	" "	4 "	10 cc "	0.018
11 A	1350 "	54 "	" "	4 "	10 cc "	0.148
17 A	1800 "	66 "	Carrots 4 days	3½ "	12 cc 60 percent	None
18 A	1130 "	45 "	" "	4 "	15 cc "	None
19 A.	800 "	35 "	C. H. O.	4 "	12 cc "	Trace

C. H. O.—Cabbage, Hay, Oats.

The viscosity of the blood during fever and after injection of phenylhydrazin.—R. Burton Opitz.

The author has shown previously that cold water and hot air baths produce an increased viscosity and warm water baths a decrease of the viscosity. In the present study the question is considered whether similar changes occur when the temperature of the body is raised by bacterial activity.

The experiments were performed upon three dogs during experimental peritonitis (*Stahyl pyog. aureus*). The determinations were made at the time when the temperature ranged from 38.7 to 39.5° C. and gave values which were slightly above the average value of the viscosity of dog's blood. Its specific gravity, on the other hand, was invariably lower than normal, indicating thereby that, in spite of the loss in solids incurred during the inflammatory processes, the blood had retained a high viscosity.

In another series of experiments the viscosity was tested after subcutaneous injection of phenylhydrazin. The specific gravity of the blood was very low in all cases, the viscosity, on the other hand, very great. It may be regarded as proved, therefore, that these two factors need not preserve a direct relationship with one another. As in the previous experiments, we have here blood which has lost a large part of its solid constituents but has retained nevertheless a high viscosity.

DIGEST OF LITERATURE.

THE TREATMENT OF JOINT TUBERCULOSIS

BY

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That the determination of the proper treatment in cases of joint tuberculosis is no simple matter, the meeting of the International Congress of Surgery at Brussels emphasized only too well; for at that time a great variety of more or less contradictory opinions was expressed by various prominent surgeons as to the proper time for, and the proper method of, operative interference—to say nothing of the discussion as to whether such interference is, in many cases, indicated at all. Certainly the question is one of so great importance that both practitioner and surgeon should be familiar with what the best minds are thinking on the subject.

The method of bone-filling so extensively used by Mosetig-Moorhof certainly represents a step forward in this branch of surgery; its success in his hands gives him the right to our attention in the report of his results. He expresses, in the first place, (Therapie der Gelenk Tuberculose, Wiener klin. Wochenschrift No. 49, 1904) suspicion of many so-called cases of "healed tuberculosis." In a considerable proportion of these the "healing" is only an encapsulation; and the patient will later have recurrences or die of miliary tuberculosis. True healing comes only when the tuberculous area is completely removed, and osteoid substance is substituted for it, the "osteoid substance" used by him being the now well-known Plombe. This he has proved by radiography, by animal experiments, and by clinical experience, is later replaced by granulation-tissue. The therapeutic indications in joint tuberculosis he states as follows: "The rational, conservative therapy of joint tuberculosis should then be an operative and active one—at least in all cases of Fungus osseus." Operative treatment includes first, a removal of all diseased tissue as completely carried out as in the case of malignant disease; and secondly, a filling of all defects with iodoformplombe. By this procedure dead spaces are obliterated, healing by first intention is promoted, and time and dressings are saved. In the five years between November 1899, and November 1904, Mosetig-Moorhof has treated 371 cases in this way. All have healed and in a relatively short time, with fully scarred wounds and useful extremities.

The technic of the procedure together with the instruments used are described in the more extensive report on the subject (Erfahrungen mit der Iodoform-knochenplombe. Deutsche Zeitschrift. fuer. Chirurgie. 66 Bd. S 589.) Moorhof takes, it is evident, a somewhat radical attitude toward the disease. Hoffa, on the other hand, considering the disease as it occurs in children, pleads strongly for conservatism. He insists (Die Bekampfung der Knochen u. Gelenktuberculose im Kindesalter. Tuberculosis iv. 1. 1905) on the erection of hygienic institutes in the neighborhood of large cities for the benefit of this class of patients. The treatment, he says, should be essentially conservative, and that such treatment will cure 75 percent of the cases (Die Behandlung der Gelenktuberculose in kindlichen Lebensalter. Wurzb., Abhandl. iii. 12, 1903). Usually a stiff joint will result but in the early mild cases complete function may be retained. Attention to general hygienic conditions, exhibition of arsenic, cod-liver oil, and potassium iodid are the features of the general treatment. Immobilization, permanent extension, "Entlastung" of the joint, and injections of 10 percent iodoform glycerin make up, together, the local therapy. The presence of suppuration is not an indication for operation nor a contraindication for ambulatory treatment. Wide incision of abscesses is only to be used in the presence of severe pain or persistent high fever. When conservatism fails, the joint should be operated but operated conservatively (arthrectomy and not typical resection.)

Blauel (Die Resection des Tuberkulosen Knie-Gelenks u. ihre Resultate. Beitr. zur klin. Chir., xlii. 1, 1904) in a study of 400 operations during a period of 27 years, draws the following conclusions: The first group of cases to demand resection are those in which conservatism has failed. The second group are those who have had the disease so long as to preclude the probability of healing with a functionating joint. The third group includes a small number of patients in whom the fungous process is progressive. In general 50 years is the age-limit for resection. In 87.9 percent of the cases in this series the resection was a success in the treatment of the disease, in 12.1 percent it was a failure. The exceptionally good results of resection of the knee warrant us, in adults and children, in regarding radical treatment as normal for all severe cases and also for light cases when conservative treatment has, after a given time, failed.

One of the most detailed of the recent anlyses of the indications in joint tuberculosis is by Garre (Ueber die Indikationen zur konservativen u operation Behandlung der Gelenktuberculose. Deutsch. med. Woch. 1905. No. 47 and 48); and his conclusions, while somewhat more conservative than those of Mosetig-Moorhof, are thoughtfully developed and stated with decision. They are based on his own experience in Rostock and Konigsberg. Certain general considerations modify, he says, in the first place, purely theoretical surgical considerations. First there is the age of the patient; and in general, conservative treatment is preferable for children, and for adults past 50. Second, there is the general condition of the patient; the presence of amyloid, or of intestinal, tuberculosis, for example, may demand amputation or resection when otherwise resection or conservative treatment would be indicated. Third, there is the social condition of the patient; resection with definite intention for a stiff joint may, for example, be done on a patient who must quickly be rendered capable of earning his living again, in whom otherwise long out-of-door life would be recommended. An abscess as such is not an indication for operation and *practising physicians should not incise these abscesses.* Garre lays great stress on the danger of these discharging fistulas to the patient's environment.

The presence of large sequestrums in the rontgen picture makes conservative treatment less favorable, but does not exclude it. In his series of 350 resections, aside from those done at the hip, he has had no immediate mortality.

The indications for treatment vary with the joint that is diseased.

1. *The shoulder-joint.* Here the results are usually good with iodoform injections, but a stiff joint results. The results with resection are bad; and the complication with lung tuberculosis is frequent.

2. *The elbow-joint.* In children under 10 and in the early stages of the disease these cases are treated by iodoform injections and a fixation dressing. A stiff joint is of course expected. In severe cases, resection is indicated. This usually gives splendid functional results and Garre has had no case of flail joint.

3. *The wrist.* In no other joint is so much to be accomplished by iodoform injections as in the wrist. The healing is wonderfully complete and the functional result (a most important point since it involves the possibility or completeness of the finger movements), is good. This is true even in old cases with fistulas and carpal necroses. The functional results, on the other hand, with resection are bad; the tendons are destroyed by the treatment; they are too long after the operation because of the removal of the carpals, and muscle contractions are a frequent sequel.

4. *The hip.* Here Garre prefers conservative treatment. The patients lie for four weeks in a plaster extension. A Lorenz-Kapeller ambulatory dressing is then applied and this is worn for three or four months. For pure fungus coxitis iodoform injections are not suited; they are reserved for cases with abscess. Resection is indicated in severe fistulous cases especially when a sequestrum is located by the rontgen picture. A persistence of bad general condition is also an indication for resection. The functional results after amputation at the hip are not good; if the leg is not too short and if a certain amount of motion is left one must be satisfied.

5. *The knee.* Strangely enough in this joint, which is at once easy to immobilize and extend and which is readily approachable for iodoform injections, conservative treatment gives unsatisfactory results. Resection on the other hand gave in a series of 185 cases healing in 94 percent. Of course a stiff knee is to be expected. Shortening of the limb is a disagreeable feature in these cases. It is due, not alone to the resection, for it occurs in cases conservatively treated; but also to disturbed nutrition of the epiphyseal cartilage. When the shortage is over 5 cm. the result is a bad one. Such a shortening occurred in 7.5 percent of a series of 117 cases in Garre's clinic; but these cases were studied some time after the operation and some of the reduction in length of limb was undoubtedly a growth-change.

6. *The ankle.* Here iodoform injections are used by Garre in four classes of cases. (a.) In fresh cases without a fistula, especially when the patient is young and in good condition. (b.) When only one joint is diseased and the tendons remain free. (c.) When no extensive bone disturbance and no large bone disease-focuses are present. (d.) When the patient is advanced in years and amputation is the only alternative. In children conservative treatment gives less, and operative treatment much more, satisfactory results than in adults. Operative treatment of tuberculosis of the ankle gives satisfactory results in about 80 percent of the cases.

The general therapeutic attitude then toward joint tuberculosis which recent clinical experience warrants may be briefly stated somewhat as follows:

1. The work of Mosetig-Moorhof would seem at once to widen the sphere and to improve the outlook of operative treatment.

2. The purely scientific questions involved in the choice of treatment must be modified by certain general considerations. These are: The age of the patient, the general condition of the patient, and the social condition of the patient. In general, the prognosis becomes worse, as the morbidity percent decreases, with the age of the patient Operative fistulae are to be scrupulously avoided, when possible, for the sake of the patient's surroundings.

3. Conservative treatment, when consistently carried out, is quite successful in children. It must never be neglected in deciding on treatment even in adults, provided the social condition allows of its application.

4. The prognosis after operative treatment varies with the joint operated. In the knee, the elbow, and the ankle, the results after radical treatment are best; the hip, the wrist, and the shoulder should usually be treated conservatively. (Garre).

RECENT EDITORIAL OPINIONS.

Journal American Medical Association.—Effects of spasm in sclerotic arteries. By palpation of the pulse the state of the circulation and the condition of the bloodvessel may be differentiated. The muscular coat of vessels may be contracted in response to various stimuli, or a tunic may be the seat of hyperplasia or degenerative change. Vessels affected by atheroma and arteriosclerosis, with or without calcareous degeneration, may also exhibit thickening from contraction of the muscular coat, causing hemiplegia, monoplegia, aphasia, etc., without loss of consciousness. Return of function occurs with the reestablishment of circulation, dependent upon the power of the left ventricle; if the heart action is too strong, the diseased artery may be ruptured. Vague pains in the head, giddiness, restlessness, insomnia, and mental excitement may be caused by spasm in sclerotic arteries. If paralysis is present, differentiation from cerebral hemorrhages, thrombosis, and embolism is necessary, and diagnosis may be very difficult. The effects of these three conditions are more likely to be permanent than those of spasm in sclerotic arteries. Prophylaxis consists in avoidance of absorption of toxic matters and of deficient elimination, etc. Treatment should be directed to these, and should also embrace the administration of vasodilators and proper cardiants when indicated.—Protection against dangerous medicines. This comments upon the "Patent Medicine Bill" reported favorably to the Massachusetts Legislature by the Committee on Public Health. The bill provides that unless the package contains "more than two grains of opium, or more than one-quarter grain of morphin, or more than one-sixteenth grain of heroin, cocain, alpha-eucain or beta-eucain, or more than eight grains of chloral hydrate, in one fluid ounce" it is not necessary to mention on the label that these drugs are contained in the preparation. The bill does not meet the conditions for the reason that preparations under the ban may, by reducing the amount of the drug and increasing the dose, still legally market their medicines since it is the narcotic that does the work and sells the preparation. Proprietary medicine men realize that there is a growing demand for legislation and are using all means to make it innocuous. One means they use is the plea that there is no danger in small doses, ignoring the fact that drug-habits are formed chiefly by agency of the insidious small dose. In addition while it is easy to detect the presence of some of these drugs the quantitative analysis is very difficult, and evasion of the law would be very hard to prove.—The toxins and antitoxins of poisonous mushrooms. Ford's recent study of the poisons of *Amanita Phalloides* shows (1) that they are of the nature of true toxins in that their action on the animal body becomes apparent after a period of latency or incubation; (2) they produce lesions similar to those of certain bacterial intoxications, and (3) they produce in animals on immunization specific antitoxins. Toxins are soluble poisonous products of bacterial, vegetable, and animal origin of as yet unknown chemical nature, but resembling organic ferments in great sensitiveness to heat and other influences. Ford succeeded in immunizing animals so that they were able to withstand multiples of fatal doses of phalloides extract and to yield a serum, 1 cc. of which neutralized 10 times the fatal dose of the extract. The phallin of Kobert, a strong laking agent for red blood corpuscles, was found to have this power suspended by immune serum, which acted as a strong antihemolytic. Death usually occurs a few days after the actual poisoning, so that the natural conditions are favorable for specific serum treatment.—The relations between human and bovine tuberculosis. Intestinal tuberculosis especially in children under ten years, is usually due to the bovine bacillus while phthisis and other forms of tuberculosis in the adult are practically always of human origin. Bovine tuberculosis is thus a minor source of infection, and the problem of reducing it to a minimum pertains to Boards of Health and cattle bureaus, and in this, the fact of the loss caused cattle owners irrespective of the relation to human infection, will prove a powerful assisting factor.—THE AUTOMOBILE FOR THE PHYSICIAN. The car practical for a physician's use should not exceed $500 in price, should be durable, compact, with power to climb any grade practicable for horse and buggy. Speed is immaterial. Construction should be simple, all parts easily reached.—MEDICAL EXAMINATION OF CHAUFFEURS. Requirements similar to those of locomotive engineers with regard to special senses and physical condition should be necessary for chauffeurs who run fast automobiles. Although the total of disaster may be less with the chauffeur, there are certainly more numerous chances for accidents. —PECULIAR TYPHOID SEQUEL. A lay journal says the bachelor who is carried through an attack of typhoid fever by a trained nurse stands a chance of 2 to 3 to propose marriage to her during convalescence. When he does not, the inference is that the nurse has neither youth nor good looks. That the romantic or scheming nurse is thus weeded out from the profession has its advantages, although the risks are unevenly divided between nurse and patient.—UNGRATUITOUS SERVICES TO FELLOW PHYSICIANS. The recent action of a New York physician in suing the estate of a colleague for professional services is condemned.

The Medical Record.—THE RELATION OF INSECTS TO DISEASE. The conception of the relation is not recent or even modern, but only in recent years has this heretofore vague suspicion been placed on a scientific basis. Facts seem clear when the causal factors are species of microorganisms which by their biologic characters of metagenesis of alternation of generations, require an intermediate host and are unable to exist for any length of time outside of the living bodies of their harborers, but the problem is more difficult in the large number of bacterial diseases in which the resistance and viability of the causing agent make possible dissemination directly or indirectly by the insects abounding in warm weather. Instances are cited bearing upon these questions. There is more than a probability that germs of many infectious diseases, are spread indirectly by insects of all varieties and the first practical application of laboratory facts by prophylactic medicine should be in the rapid destruction of infectious material, its isolation from flies, and with reference to typhoid fever especially the proper protection of food during warm weather.—ARMY MEDICAL SCHOOLS. The French medical officer has about five years of combined military and medical training before he is appointed to a regiment, much of this at the expense of the government. Recruiting by open competition from civilian physicians is not encouraged. The government has a steady supply of medical officers experienced and trained in their duties. The plan has many suggestive features for the American army which needs better development in its medical branch, the personnel, equipment, and work of which are excellent, yet which has been much hampered by the niggardly policy of Congress. Special fitness and training are required to fulfil properly the duties of a malitary surgeon, and the Army Medical School at Washington has already justified its establishment.—THE NEW ALIEN ACT IN GREAT BRITAIN has had the result of preventing many persons undesirable from a health point of view from embarking for England since it is understood by agents and captains of vessels carrying immigrants that unless their passengers are in a sound state of health they will not be permitted to land but will be sent back at the expense of the steamship companies. Since the bulk of immigration are Russian and Polish Jews, and since Jews always congregate in cities, this means a further congestion of already congested city districts and is a menace for reasons both of health and economy. Many authorities are advocating measures as stringent as those of the United States.—THE COMPLICATIONS OF OVARIAN TUMORS. Early operation is advocated in an increasing number of cases and the inadvisability of delay is especially shown in newgrowths since most of the complications are serious. C. C. Norris' recently reported series of 63 consecutive cases of ovarian tumors demonstrated the advisability of early operation unless strongly contraindicated. Norris believes we are warranted in regarding all cases of ovarian tumors malignant unless proved otherwise, and the operative mortality of malignant cases should not to be above 10 or 12 percent. Diagnosis should be based upon a number of sections. Parovarian tumors are much more benign—.ANOTHER SUGGESTION FOR A COMBINATION ANESTHESIA. Royster believes that satisfactory effect can be obtained from the use in sequence of scopolamin-morphin, ethylchlorid, and ether, since ether is the safest general anesthetic, ethylchlorid secures the pleasantest primary narcosis, and the preliminary use of scopolamin with morphin quiets the patient's nerves and fears and thus lessens the quantity of ether necessary to keep up a complete anesthesia. He has used his method in a series of about 50 cases, and his excellent results show it deserving of further attention and trial.—THE SMOKE EVIL. The health commissioner should have the support of the public and judiciary in his recent movement against the violations of the law. The matter is of sufficient importance to require adequate punitive measures.

The Boston Medical and Surgical Journal.—THE QUESTION OF A HOSPITAL FOR CHRONIC DISEASE. Measures must be taken in the near future if Boston is to retain its place as a progressive medical center. Persons suffering from incurable maladies must either be declared paupers or be forced back upon their families since there is no provision for their accommodation other than the almshouse hospital. This may be had by separation of the hospital from the almshouse proper and preliminary steps for this have already been taken. With reference to pauperism hospitals for chronic disease should stand on absolutely the same footing as those for acute disease. —THE TRAINING OF NURSES. A reaction is taking place, with a feeling that the attempt to exalt the calling of the nurse to a profession is fraught with danger. The papers read at a recent meeting of the New York Academy of Medicine forcibly presented this view, all the speakers save one, Miss Samuels, Superintendent of the Roosevelt Hospital Training School, being of opinion that too much was taught at present in these schools. The paper of John C. Munro in *American Medicine* March 31, points out the errors and fallacies of the present system. The patient's welfare is the first consideration, and requires complete cooperation of the nurse with the physician. A disturbing influence is the "overtraining" of the nurse, by which the patient must pay high prices for a sort of knowledge that is not required and is often detrimental to the simple and conscientious performance of the disagreeable duties of the nurse. Knowledge of any sort cannot take the place in the sick-room of tact and proper feeling. Training schools should reorganize their over elaborated curriculums.—DIET AS A THERAPEUTIC AGENT. Modern therapeutics is characterized by rationality and commonsense. Therapeutic vagaries are becoming less conspicuous; the study of body metabolism and the chemistry of physiologic processes will lead to more accurate therapeutics; attention to diet, exercise, general hygiene, and various external means, are being substituted for the habitual routine of internal drug administration. At the next meeting of the Association of American Physicians a group of papers will be presented on "Therapeutics based upon Pathologic Physiology." A recent number of *The Practitioner* devotes its entire space to a consideration of diet. Within the year two important works on diet in health and disease have appeared. Such rational therapeutics will go far toward sapping the strength of quackery and establishing a more normal relationship between physician and patient.—THE ARMY MEDICAL BILL has reached a final and critical stage in its progress toward legislative enactment, having passed the Senate and having been reported favorably by the Military Committee of the House. There is no reason to anticipate unfavorable action by the House, and the President has repeatedly expressed himself in favor of its provisions. The general design is to do away with the contract surgeon and raise the standing of the medical corps, procedure viewed with approval by the general medical profession.

The New York Medical Journal.—PLAGUE AT REEDY ISLAND. The recent discovery of plague near one of our large ports demonstrates the efficiency and utility of the national quarantine. Although there is no danger because of prompt and efficient measures, still the climate of Philadelphia in summer would be most conducive to its continuance and spread if it should gain a foothold on shore.—EMBRYOLOGY AND SENILITY. Those who have deemed the search for the underlying causes of the phenomena of senescence a profitable subject for scientific investigation may be classified into those who regard old age as the result of the operation of external agencies upon the living organism, a form of intoxication of the cells by the productions of microbic activity in the lower part of the alimentary canal, and those who hold that the causes of old age are intrinsic, inseparably bound up with the developmental processes of the cells. Professor Minot, the leader of the latter school, in a recent lecture before the Harvey Society, propounded his personal views, which, for ingenuity and sanity contrast sharply with the quasi-scientific literature abounding on this subject.—AGE AND THE RATE OF GROWTH. Minot finds the percentage of growth in guineapigs, rabbits, and chicks diminishes gradually from birth, the falling off being more rapid earlier than later. The further back one goes toward the ovum stage the greater is the rate of the growth, the animal thus losing the greater part of its power to grow even before it is born. Associated with the decline in the rate of growth there occurs a cycle of "cytomorphosis," of three stages, the embryonic, of differentiation (cytostatic and cytodynamic), and degeneration.—AGE AND THE FACULTY OF ACQUIRING KNOWLEDGE. Minot says the size of an animal is dependent upon the number of its cells. The extraordinary growth of the protoplasm at the expense of the nuclei of the cells, is the cause of the loss of power of growth, and of cytomorphosis. Differentiation and decline in rate of growth are causally interwoven. The power of acquiring knowledge diminishes with age, "permanent fatigue" being a characteristic of old age, and in a study of the final developmental changes in cells one may find the clue to senescence.—THE LONGEVITY OF LOW ANIMAL ORGANISMS is because they have a low degree of organization, according to Minot. They have practical earthly immortality at the expense of the larger gift of enlightened experience.—THE CHIMERA OF THE INTESTINAL DISINFECTANT. Disbelief in the efficiency of internal administration may be expressed without therapeutic pessimism. To reach the mucous coat of the intestine in appreciable amount it would require to be given by the mouth in quantities so great that no one would dream it safe to employ. One cannot conceive that any medicament will ever be found that, given in reasonably safe amounts will meet with intestinal elimination in quantities sufficient to exert a decided antiseptic action upon the mucous membrane of the intestines.

NEWS AND NOTES.

New Jersey Mosquito Bill Signed—Gov. Stokes of New Jersey has signed the Brown Mosquito bill. Under its provisions an appropriation of $350,000, or $50,000 annually for seven years, becomes available for use in fighting the pest. State Entomologist Voorhees has perfected elaborate plans for destroying mosquitos and the work will begin immediately.

Illegal Advertisements in New York.—The crusade against advertising illegal medical concerns is being followed up vigorously by the post-office and the County Medical society. Three leading daily papers carrying this class of advertising have been notified that if they continued publication of such advertisements they will not be permitted to send their papers through the mails; they have since complied.

Tuberculosis and Teachers.—The Minnesota State Board of Health advises officially that those suffering from tuberculosis shall not be employed as teachers because of the fact that the occupation lessens their chance of recovery and because they are a menace to children in their care. They also urge that children suffering from tuberculosis be excluded from schools for practically the same reasons. These suggestions have been sent to all school-boards and to the superintendents of city and county schools.

The German Surgical Congress held its thirty-fifth annual meeting from April 4 to April 7, under the presidency of Prof. W. Koerte, the earlier date having been fixed to prevent interference with the International Medical Congress. One of the most interesting parts of the program was the discussion on questions of military surgery arising out of the Russo-Japanese war. Great interest was also manifested in the symposiums upon the surgical treatment of gastric ulcer, the Bier method of artificial stasis in the treatment of acute inflammations, and upon a new method of operation for high seated cancer of the rectum.

Personal.—DR. JAMES W. HOLLAND has resigned the deanship of Jefferson Medical College, but will retain the chair of chemistry.—THE CHAIR OF ANATOMY AT JEFFERSON COLLEGE has been divided into two chairs, that of applied anatomy which has been assigned to Dr. George McClellan grandson of the founder of the college, and the chair of general anatomy to which Dr. Edward Anthony Spitzka of New York has been elected.—SENATOR CLEMENCEAU, the French Minister of the Interior, is an able dermatologist, and daily devotes an hour to consultations without fee.—DR. HENRY SYKES, for 13 years superintendent of the Episcopal hospital in Philadelphia, has been appointed the medical superintendent of the Philadelphia hospital.—DR. GEORGE BEN JOHNSTON has been elected to the chair of surgery at the University of Virginia, and has been made chief of the hospital staff of the university.—W. HIS of Basel has been elected to the chair of medicine at Gottingen to succeed W. EBSTEIN.—HONORARY MEMBERSHIP to THE IMPERIAL MEDICAL SOCIETY of VIENNA, Austria, has been conferred upon W. H. Welch of Baltimore, Md., Nicholas Senn of Chicago and O. Schmiedeberg of Strasburg. The following were appointed corresponding members for America: J. J. Abel and John C. Hemmeter of Baltimore, Christian Herter, Graham Lusk, and L. Emmett Holt of New York, and Jacques Loeb of the University of California.—PROFESSOR PIERRE CURIE, who conjointly with his wife was the discoverer of radium, was run over and killed at Paris, April 19.

49

American Medicine

GEORGE M. GOULD, *Editor*. G. C. C. HOWARD, *Managing Editor*.

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Controled Materia Medica products present probably the most serious problem before the profession. For the last quarter century they have exerted a force more demoralizing than any other active today, since more than any other they have been responsible for the growing commercialism that has lowered standards in the profession. That they have seemed the tempters is merely a natural result of the keen competition which forms the best blood of business life; that members of the medical profession should have been tempted—and should have fallen—is a corollary to the unpracticality of the average physician, the disheartening struggle for establishment, and the poor financial returns for years of work.

The financial interests of the manufacturer necessarily are of leading importance in his eyes, and from all practical standpoints he should not be censured that this is so, provided he uses only methods considered honorable in business. The greater blame rests upon the "altruistic" medical profession when it permits itself to be exploited not for the benefit of the race for the betterment of which it professes to work, but for the profit of commercial interests solely. The "good business methods" of the manufacturer lead him to seek every advantage possible for his products. He craves the endorsement of physicians, the publicity of legitimate advertising, and admission particularly to the reading pages of standard medical journals. Hence come inspired therapeutic reports, the renegade physician who will sell his endorsement to the highest bidder, the growing therapeutic nihilism of the general practitioner, the recreancy of the medical press, the arrogance of the nostrum vendor.

Controled Therapeutic Agents Should be Made Ethical.—There can not be two opinions as to this; the only doubt is as to the best method. Unless suspicion is eventually to attach to all socalled drug preparations, those that are worthy must be standardized. And unless the practice of medicine is to be resolved chiefly into the use of mechanical means, a way must be devised by which honorable physicians may investigate these medicinal preparations and publish favorable, (as well as unfavorable) results without incurring the reproach of having been "bribed." And these investigators should also be as much entitled to accept pay for expert work and expert opinions as the surgeon or the consultant.

The American Pharmacologic Society whose aims are succinctly set forth by Dr. F. E. Stewart in this issue, apparently offers the best plan thus far presented to the profession. It has been carefully thought out and has had the advantage of long consideration and discussion by men eminent in the profession, and who are now preparing to lend the weight of their influence to the movement. The plan seems to carry out existing measures to their logical conclusion and to supplement in a most valuable manner work already in hand by other organizations. No other plan unites the interests of medicine and pharmacy as does this, giving the manufacturer a good business reason for ethicality and giving sanction to proper and well compensated expert work in pharmacology by physicians. *American Medicine* is of opinion that the plan deserves fair trial at the hands of both the profession and the manufacturing druggists and chemists. It should be made as perfect as possible in its inception and working, and we therefore bespeak for Dr. Stewart's presentation careful reading and prompt criticism by both physicians and manufacturers, in order that its weak points may be discovered and eliminated. In a later issue we plan to present a "Working Bulletin" of the Society in order that the scheme may be considered from the practical as well as the theoretic side.

The Hunts of the Seekers and of the Givers of Honorary Degrees.—When Herbert Spencer told the Universities who sought to honor themselves more than the recipients of their degrees that they had waited too long, he gave a capital illustration of a great truth. When their proffer of the degree would have given Spencer and his philosophy much encouragement the institutions had no mind to help. This was because they could not then score two for themselves while marking one for Spencer. So self-confessed has this low cunning become that the rejection of the degrees by worthy men is now the rule and the poor institutions have a hard time of it to find politicians (of many varieties, the medical included), who will play into the hands of the managers. Of course the degrees are rapidly becoming worthless, and nowadays the man who puts LL.D., D.D., etc., after his name confesses that his egotism is more powerful than his judgment. Surely it overtops his erudition, because not even universities, hard put to by enterprising and advertising rivals would now contend that the titles have any relation to learning. (The matter of character never did much enter into the count.) It is gratifying to find a modern man who refuses the suggestion of the honor for the proper reason. By long opposition Dr. Burt G. Wilder has made it plain that he has sound ethical objections to the "recessive" tendencies of our institutions of "learning." It is becoming abundantly evident that their officials care far more for numbers of students, for millions of endowments, and for "athletic" success than they do for the quality, the scholarship, and the character of the students. There is little hope they will inscribe on their walls such mottoes as, "vox turbæ, vox diaboli"; "In an individual folly may be merely a fault, in a university it is a crime." Professor Wilder writes, "There prevail in nearly all American universities conditions such that not even the proffer of an LL.D., would induce me to don the scholastic garb indispensable to the reception of an honorary degree." A noble sentiment nobly expressed!

The establishment of the metric system is now being requested of Congress. It is the annual effort of the advocates of the change, who will no doubt keep up the fight until there is some definite action taken. The petitions contain the names of less than five thousand people of the 80,000,000 to be affected, so that Congress is quite sure to wait until it finds the needs and wishes of the 79,995,000 yet to be heard from. As most of them have never heard of the matter and never will, they are wholly indifferent. If the change is made, they will continue to talk of their 160 acres, their half and quarter miles, as did their ancestors. Such measures of land are permanent fixtures and can not readily be eliminated, since the country is divided up in this way. There is a feeling that the metric measures will benefit trade, but as the greatest trading nation of the world refuses to adopt it, the statement can not be regarded as absolute. There seems to be a failure to realize that the division by tenths, though indispensable to scientists, is not really natural. The mass of mankind can only divide by two or three and demand weights and measures having these simple relations. The intense opposition to the metric system shown by many able men of affairs and also many scientists would seem to indicate that there is good cause for Great Britain's conservatism, and that we should delay action until the matter is fully discussed. The common people originated the present measures because they needed them in their business, and it might be disastrous to give them what a few scientists have found useful in their business. The tremendous advantages of uniformity throughout the civilized world should not blind us to the disadvantages to the common people who do all their adding and dividing in their heads. We must make haste slowly, as it is far better to be sure than sorry. More discussion is needed.

Desert Thirst as a Disease.—Of the three types into which thirst as a pathologic condition has been grouped, that of the desert is most purely the deprivation of moisture without the influence of modifying external circumstances. That form known as ordinary thirst occurs under the favorable surroundings of humid air and often protection from the sun. Sea thirst is also under the influence of air heavily charged with vapor, with plenty of water, though nondrinkable, at hand and is modified by the presence of salts externally. In cases of desert thirst, water, even as a vapor, is entirely lacking or nearly so and the influence of external salts is a minimum. Death from thirst is a horror that has many times been described by onlookers, or, paradoxically speaking, occasionally by those who have really suffered its pangs by going through the various stages until unconsciousness is reached but who happily, though rarely, are rescued and survive. Never have the phenomena of extreme thirst been pictured more graphically than by W. J. McGee, LL.D., Director of the St. Louis Public Museum, in a paper[1] reporting the remarkable survival of a Mexican in southwestern Arizona. This man was in the desert eight days and nights with only one day's supply of water. During that time he rode in the saddle 35 miles and walked or crept between 100 and 150 miles. For seven days he was entirely without water and during five of these he consumed his urine, the kidneys not secreting during the last two. The bowels did not function for nine days. As a result of the deprivation the man lost one-fourth his body weight. An extraordinary feature was the lack of totally insane delirium which so commonly is a part of the mental condition of these persons. This allowed him to follow the trail and accounts for his reaching aid although his phenomenal physical endurance was the real cause of survival.

The Phenomena of Desert Thirst.—The case recorded by Dr. McGee was most unusual in that half of those dying from desert thirst perish in 36 hours, a quarter within 48 or 50 hours and all others of which the history is known by the eightieth hour. Dr. McGee discusses thirst in general and then in particular desert thirst, the phenomena of which he arranges under three stages, normal thirst, functional derangement and structural degeneration. Making up these stages are five phases, most of them descriptively named by survivors and well known to those who frequent the desert, namely, the clamorous, cotton-mouth phase, the shriveled tongue, the blood sweat, and the living death. The first phase is relieved by water or in some instances fruit acids or similar substances may be required. Thirst in the second phase is best relieved by water, taken by quarts in small sips, and thrown over the body in quantities. Persons in the third phase also require water by gallons, inside and out, but cautiously applied. Usually in addition a febrifuge should be given and in some cases a heart tonic also is indicated. But little of value may be possible for those in the fourth phase. Water may be a damage. If physical recovery does occur, the mental condition may never clear. In the final phase there is no alleviation but the end. Fortunately this appears often to be painless. Dr. McGee has spent a great deal of time in the deserts of the southwest and has himself gone half through the stages of desert thirst and is thus personally well qualified to speak upon the subject. He has furnished us a most vivid pen picture of this not infrequent cause of death.

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[1] Interstate Medical Journal. Vol. XIII., No. 3, 1906.

Defective vision of school children exists to a startling extent according to the report Dr. H. M. Bracken, the Secretary of the Minnesota Board of Health. An appeal was made in 1904 to the Superintendent of Schools in each village or city of more than 1000 inhabitants and instructions were furnished for certain simple tests for ametropia. About half the municipalities responded and the replies show varying numbers of defectives,—often as high as 20 per cent. From a general survey of the published figures (St. Paul Med. Jour., Oct. 1905) it is fair to state that one child in every five has some defect which should receive intelligent treatment by those who understand the importance of the matter. Too many men suffer in after years from this early neglect. The first thing to do is to convince the teachers of the importance of the matter and then the correction will come as a matter of course. At all the teacher's institutes, normal schools, and summer training schools, the matter could be profitably enlarged upon. It is significant of the changing times—the poor little body must be looked after, as well as the mind. There seems to be a general movement all over the world, to look into the whole question of the health of school children and it must be encouraged. Better educational results will follow as a matter of course but the vigor of the coming generation is the main point after all. It is desirable that other States take up this matter—certain cities have made excellent progress but more—much more—must be done.

The recent death of Professor Curie recalls the truly momentous discovery of radium which he and Madame Curie made conjointly. Neither would declare, except to lay the praise upon the other, to whom the chief credit was due. This element exhibits properties which seemed at first to be subversive of the whole fabric of modern physical science, built as it is upon the principles of the conservation and the correlation of energy. Radium gives forth light, a form of energy; but did not seem to give heat, a correlated form. Those who experimented with it however, soon experienced its destructive tendencies, similar to those which are characteristic of the exhibition of heat. Thus were the principles referred to not subverted, but rather more firmly established. Hardly less momentous than this initial discovery was another which grew out of it—that the eighty odd elements of which chemistry treats are perhaps but varieties of a single element, which is the basis of all matter. This seems now becoming admitted by scientific opinion. Sir William Ramsey, among others, demonstrated this when he decomposed the "element" radium and produced from it helium, another "element." (It seems we must now put the word within quotation marks; for in the newer knowledge the term element denotes in reality not an elementary substance at all). New terms have been evolved as necessary to define such shapes of matter as were formerly described as atoms, elements and the like, and old terms must be given new meaning. The actual unit of matter is not the atom but the *electron* which is really a unit of negative electricity. Like electricities tend to repel each other; and that which we have been accustomed to denominate an atom is really an entity held together by a core of positive electricity, now known as the *ion*. Dr. Saleeby, in his interesting book "Evolution the Master Key" offers a very comprehensive exposition of this subject and in a manner interesting as well as instructive.

Cheap insurance for clergymen is the alluring proposition of a new company and curiously enough it is based in large part upon the theory that there will be no fraudulent claims. If this is really true it should open our eyes to the fact that in all our accident and life insurance, the premiums are kept unduly high to cover losses due to fraudulent claims and grave yard cases. As a rule cheap companies fail as soon as the insured begin to die off, and the ones who are lucky enough to live are the only ones swindled. It is wise to look askance at all cheap affairs anyhow, but this matter raises the point that it is to the interest of every policy holder to constitute himself an agent of his company to prevent frauds and illegal expenses.

Extension of Subscriptions.—All subscriptions to *American Medicine*, prepaid upon the weekly basis, have been extended upon the books of the company for a period to the monthly corresponding to the amount of the subscription payment unfulfilled by weekly issues. Thus a subscriber who, having paid one year in advance, or four dollars, on October 1, 1906, has received six months of weekly issues, is entered for two years in advance from April 1, 1906, to the monthly. Subscribers who paid their subscriptions after the discount period had passed, or at the rate of five dollars a year, have also been extended proportionately for any amount unfulfilled by weekly issues. Information as to the amount of extension in individual cases will be sent on application.

The advertising department of *American Medicine* will hereafter be under the immediate direction of the general management, in order that certain contemplated measures may be effectively inaugurated. Dr. H. M. Simmons, of Baltimore, formerly in charge of the department, retires, with the best wishes of the friends he has made during his incumbency.

Is the Negro Race Dying out in America?—According to Seale Harris, Professor of Medicine in the University of Alabama, the negro race is becoming extinct through the ravages of tuberculosis and venereal disease. Statistics, he claims, show that the deathrate in the race is far in excess of the birthrate.

Medical Inspection of Schools in the Transvaal.—A committee has been formed in Johannesburg with the mayor as chairman to urge upon the government the necessity of the medical inspection of school children. But for financial difficulties some system would have been adopted shortly after peace was declared.

CORRESPONDENCE.

[Communications are invited for this Department. The Editor is not responsible for the views advanced by any contributor.]

THE AMERICAN PHARMACOLOGIC SOCIETY AND CONTROLED MATERIA MEDICA PRODUCTS.

BY

F. G. STEWART, M. D., Ph. G.,
of East Orange, N. J.

To the Editor of American Medicine:—Last October there was organized in the city of New York a society with the above title having as one of its objects the solution of the problem of controled materia medica products, and the relation of the medical profession and medical press to them.

This society has now perfected its plan of organization so far as the researches and study of its members will permit, and desires to present the plan to the profession and press for consideration and comment with the view of developing and strengthening its weak points.

The principles upon which the society is founded are that progress in materia medica science can only be attained under a system of practice which secures the publication of full information concerning every new product, and its proper scientific classification; and the medical profession is responsible to the State for its accomplishment.

Pharmacology, or the science of materia medica, is dependent upon the knowledge acquired in the practice of the pharmacologic arts, namely, pharmacy, pharmacognosy, pharmacognosis, and drug therapeutics. By a gradual process of segregation the practice of the pharmacologic arts has separated from the vocation of the priest and divided itself into many specialties. There seems to be no doubt that medicine has been the gainer by this. But the knowledge of pharmacy, or the science of preparing medicines, cannot be separated from the knowledge of drug-therapeutics and separately classified as a science by itself. The knowledge of one is dependent upon the other, and both are but parts of the science of materia medica, or pharmacology as some prefer to call it.

The founders of the society go still further and assert that it is just as ethical for those who practice pharmacy to accept pay for their service as it is for the practitioner of surgery and therapeutics. The physician and surgeon sell their advice for money, and the pharmacists sell their preparations for money. Therefore the transactions of both are to an extent commercial. That pharmacists often invade the field of the physician and prescribe and recommend their medicines for the cure of the sick is admitted to be morally wrong on the ground that treating the sick without knowledge of the nature of disease and without diagnosis is wrong. Of still greater wrong is it for pharmacists and manufacturers to prescribe at long range by advertising that their preparations are specifics or cures for diseases, curable or incurable. But these are abuses to be corrected and not arguments against the principle that pharmacy is part of medical science, and its proper practice a medical art concerning which the medical profession are under obligation to control.

Theoretically the control of medical and pharmacal practice is under medical and pharmacal laws. Practically any person by setting himself up as a manufacturing pharmacist or chemist is free to invade the medical and pharmacal field with his nostrum. No education or training either as physician or pharmacist are require, and no license is needed. And there seems to be no way in this country to prevent it.

Recognizing that under existing circumstances pharmacists and manufacturers are powerless in the matter as individuals or firms, as they must meet competition with competition or go out of business, the plan is to separate out from the unofficial preparation on the market a list of articles for physicians' prescriptions and make them ethical.

This plan, long advocated by the founders of the society, has been adopted in part by the Council on Pharmacy and Chemistry of the American Medical Association. In fact the Council is the outgrowth of the work of the founders of the society.

But the founders of the American Pharmacologic Society go much further in their plan than the Council. What the medical profession is particularly interested in is what these preparations are good for as therapeutic agents. This the society proposes to find out in the following manner:

First, by fixing tests for determining the identity, purity, and strength of the product, thus securing uniformity in therapeutic effect.

Second, by sending the products to one or more physiologic laboratories to ascertain its physiologic action on animals.

Third, by sending it to at least two clinicians for clinical test.

Fourth, by compiling the results of these tests in a "Working Bulletin" and sending the same to the members of the society and others for a collective investigation of the therapeutic merits, and publishing the results whether favorable or otherwise.

It is proposed to secure the cooperation of the commercial introducers of the products investigated and have them pay for this work.

Manifestly, therefore, the society purposes to investigate controled products.

Products are controled by their commercial introducers in several ways, viz, by secresy, by trademarks, by patents on processes and by patents on products.

It is self-evident that the application of the rule necessitating the prior standardization of the product before testing its physiologic and therapeutic properties will at once destroy all secresy; and therefore, unless the product is protected by patent the commercial introducer will soon have competition and a corresponding cut in price will result. This limits the work of the society to absolutely non-secret products controlled by patents, although the society will also operate on brands of free products controled by trademark. Articles examined and favorably reported upon will be permitted to bear such statement on their labels.

For example of product controlled by patent take phenacetine. This product is controlled by a patent on the product itself, as well as on the process for making it; so no matter how many processes are discovered for its preparation no competition is possible until the product patent expires. This is considered by some to be unfair, but when it is further considered that the burden of expense incident to the commercial introduction of the product is thrown upon the introducer, and that a very large proportion of the cost of introduction is for advertising, the other side of the question presents itself. Except for the advertising patronage of the manufacturing houses the cost of medical periodicals would be far greater to the readers.

But medical journal advertising has been thrown into disrepute because advertisements give the favorable side only, and many journals are afraid to tell the unfavorable side for fear of losing advertising patronage. This difficulty is immediately removed by the "Working Bulletin" plan of the American Pharmacologic Society. In the "Working Bulletins" of the society can be found the whole story. The whole story cannot be told in the restricted space allowed for advertising. But the whole story must be told for scientific and educational purposes, as well as to protect the profession from being misled and defrauded. Moreover, physicians cannot use a new materia medica product intelligently without knowing it suntoward effects and its limitation as a therapeutic agent, and this information is never found properly stated in advertisements.

Several objections have been urged against the plan of the society, which are worthy of consideration.

First it is objected that while it may be safe for expert chemists and physiologists to accept pay for their work because the results can be readily verified by independent investigation, it is a very difficult thing in regard to theurapeutic opinions. Here the personal equation enters in and even if the observer might not consciously lie for money, he might readily become an unconscious liar if the monetary considerations were high enough.

The force of this objection must be admitted, and the objection would in our opinion be sufficient to condemn the plan except for the collective investigation feature. Dr. Wm. H. Thompson, in his discussion of antitoxin at the New York Academy of Medicine in 1896, said: "The verdict about an alleged remedy must depend upon the findings of a jury whose members should not only be competent, but also so numerous and of such difference in locality and nationality that all personal or local influences can be safely left out of account. . . . In questions of therapeutics, personal experiences and supposed personal experiences, are so beset with fallacies that errors can be minimized only by the calculus of very large averages, and if the elements for these are not yet enough, we must be content to wait until they are." This is true. No one expert or society of experts can pronounce therapeutic verdicts. On the other hand no physician of sufficient ability and reputation to act as an expert upon the therapeutic value of any preparation could afford to risk giving unwarranted favorable opinion and be paid for it when the consensus of the collective investigation would be against him; and no manufacturer could afford to pay him.

However, the plan of the American Therapeutic Society seems most excellent for collecting evidence for and against new materia medica products. The society purposes to send its bulletins very generally to the leading faculties of educational institution throughout the world to aid clinicians in their work, and, in each instance, the manufacturer whose product is undergoing collective investigation is pledged to do nothing to hinder the work. This plan removes the embargo placed upon the press by advertisers, and throws the products open to free and impartial discussion. The paid experts who do the initial work under the auspices of the society merely introduce the subject to the profession for this discussion. The verdict is reached only after years of discussion and is never pronounced by the society.

The use of patented synthetic chemicals by physicians has grown to enormous proportions, and if the profession is to continue their use, as is doubtless the case, some plan must be adopted to secure full and impartial discussion of their merits. The plan of the society seems to be eminently calculated to secure the desired results. It is certainly worth a trial.

It is inethical for physicians to accept pay from manufacturing houses for therapeutic opinions regarding controlled products under existing conditions, but no more unethical than it is for other physicians to prescribe them. The fault is not with the controlled products, but with the conditions. Change the conditions in such manner as to prevent the manufacturers from marketing their products in an inethical manner; and what is now inethical will become ethical provided rules can be adopted and enforced to secure ethical opinions regarding controlled products from competent observers. This the society proposes to accomplish by establishing a board of censors consisting of experts in pharmacology, chemistry, and clinical medicine and an advisory council of the same character; the former to do the work of investigation, and the latter to pass upon the work when it is finished. As the expense of the investigation in each case will be met from a fund contributed by the manufacturers, and the experts will be paid by the society for their work, it follows that the experts doing the work will be indirectly in the pay of the manfacturers. But the members of the council will not receive pay for censoring the work. It is therefore proposed to have the membership of the council composed of persons belonging to the faculties of medical and pharmaceutical institutions where the branches are taught and abundant facilities offered for laboratory and clinical work. There experts are in no way dependent upon the manufacturers for a living.

Finally it is objected that the manufacturers will buy up the council. The possibility is admitted. We all know that doctors are human and some are dishonest. Surgeons have been known to have their minds so twisted and distorted by the prospect of fees as to operate needlessly. But surgery owes its rapid advancement as a science and an art to the fact that it is a money-making business and the remuneration has been sufficient to attract some of the best brains in the country into the profession. What pharmacology, science, and practice needs is the injection of money into the practice to stimulate progress. The danger does not lie in that, but the danger lies in the fact that owing to the notion that it is inethical to accept pay for their opinions experts sometimes take pay and pretend they do not, and this produces a condition of demoralization. Place the experts in a position where they can accept pay above board and such dishonest practices will disappear. This of course would apply to the members of the council, who might also accept fees except for the reason that educational institutions and their facilities should not be used for promoting commercial enterprizes. The object is simply to provide a check upon its experts which the educational institutions can apply at any time. The council would do no work of investigation except upon its own initiative and for the purpose of defending the interests of the profession in doubtful cases.

The plan of the society opens the door to the graduates of the educational institutions where they can find remunerative employment as chemists, physiologists, botanists, and biologists in the scientific departments of the large manufacturing establishments and receive both money and credit for their work. Publications emanating from the manufacturers are now regarded with suspicion. It is not to the advantage of any expert to be in their employ. Place these scientific departments under the censorship of a scientific society supporrted by the manufacturers and working in cooperation with the educational institutions and what is now without honor at once becomes honorable.

The plan of the society opens the reading pages of the medical and pharmaceutical journals to the publication of censored articles on controlled products, and relieves the journals of the censorship. The censorship being exercised by the cooperate action of professional, commercial, and educational interests prevents confliction between these interests.

But why work on controlled products at all? it is asked. Why not change our patent laws so that materia medica cannot be controlled by patent? or in any other way, except by limiting the practise of the pharmacologic arts to licenced practitioners. The answer is that we have no proper medical and pharmaceutic laws, and are not likely to have for many years to come. In the mean time the patent law, properly administered, is capable of offering grand service to science and the chemical and pharmacal industries.

The object of the copyright and patent laws is to promote progress in science and useful arts by making the business of writing and publishing books, and inventing and marketing inventions sufficiently renumerative to attract capital. For many years the profession has availed itself of copyright protection, and there seems to be no good reason why it should avail itself of patent protection. Because the nostrum trade has thrown the patenting of materia medica inventions into disrepute is no argument against it. The way for the profession to correct the abuse of our patent laws as applied to materia medica is to take the subject into its own censorship.

A patent is a *grant* by the Government, representing the public at large, made to the inventor of a new and useful invention for a period of seventeen years in exchange for the publication of full knowledge of the invention for the benefit of science, and the relinquishment of all proprietary claims at the expiration of the patent. During the seventeen years monopoly, competition in the sale of the invention is prevented thus enabling the manufacturer to provide a fund for its introduction.

A patent is also a *contract*, and it is well known that fraud vitiates every contract. Misleading the sick, or, what is if possible worse, misleading the medical profession by misrepresentation in advertising, are of all species of fraud the most contemptiable, and the better class of manufacturers will be pleased to cooperate with the profession in a plan to prevent fraud in advertising. Proof of fraud in any case would vitiate the patent for the product lied about.

The ultimate object of the society is to promote progress in pharmacologic science and in the arts upon which that science depends. The object of applying the patent law to the materia medica is likewise the same. By the plan of the society the object evidently may be attained if the plan itself is carried out under proper auspices. The society elected officers, directors, and council composed of men standing high in the profession. They will all be pleased to serve the society if the plan is approved by the profession. Free and impartial discussion of the plan is therefore important. The Society has therefore placed the matter in the hands of *American Medicine* to bring before the profession and the professional press. Copies of the constitution and by-laws will be sent to the medical and pharmacal journals, and extra copies will be supplied those desiring to take part in the discussion by applying to the journal or its Editors.

THE ASSOCIATION OF AMERICAN PHYSICIANS.

BY
ALLER G. ELLIS, M.D.,
of Philadelphia.

To the Editor of American Medicine:—The twenty-first annual meeting of this Association held at Washington, D. C., May 15-16, 1906, under the presidency of Dr. Frank Billings, of Chicago established a record for the amount of scientific business transacted. The program contained the titles of 61 papers, exclusive of four to be read by title. The president's address was devoted largely to the consideration of this fact, in view of possible criticism of the length. Each writer was requested to read only an abstract, it being the desire of the council that no paper hereafter be read in full. In spite of this plan the program was too lengthy and discussion, always a valuable part of these meetings, was more than once limited by the lateness of the hour. A proposed amendment limiting the number of papers to thirty should be passed at the next meeting.

The material presented at this session was of a very high order of merit and throroughly sustained the reputation of the Association as one of the most progressive of the scientific bodies in the United States. Experimental studies were much in evidence and statistical compilations were not given undue prominence; those of the latter presented were carefully prepared. The experiments included strictly pathologic studies and also investigations along the line of pathologic physiology, the trend in the latter direction being specially noticeable and gratifying. Dr. L. F. Barker, in speaking of the experimental study of cardiac murmurs, stated that investigations of this type are of much more value to the clinician than are those dealing with pathologic anatomy. These studies by Drs. Thayer and MacCallum, Baltimore, cleared some points as to the mechanism of cardiac murmurs and suggest the great value of such demonstrations to medical students if they can be arranged to present to classes.

In a brief communication it is impossible to give more than a hint of the material presented at the meeting, but some points of special significance may be mentioned. Two symposiums were presented, one on Therapeutics, based on Pathologic Physiology, and another on Exophthalmic Goiter. Under the first were included six subjects, that of the effect of environment in hospital and private practice, by Dr. W. B. James, emphasizing points that are too often neglected. These include putting patients to be operated on by the side of those recovering from ether, dying persons beside those with the same disease, and other similar points but particularly placing all patients in bad conditions of light, temperature, and ventilation. Feeding in typhoid fever brought out in the discussion the fact that many of the members are giving the so-called liberal diet in this disease though some still hold to the fluid regimen.

Several papers dealt with the artificial production of arterial lesions in rabbits by the use of various substances, as nicotin, adrenalin, barium chlorid, etc. By the use of barium, Dr. J. L. Miller obtained lesions which he regards as beginning in the elastica. By adrenalian the lesions appear to begin in the media, or at least this is the general opinion of those reporting on the subject. Experiments now under way by one of the members appear to come one step nearer the solution of the actual cause of the change. He is producing lesions by causing rabbits to inhale nicotin. This produces arterial lesions without first causing increased blood pressure and hence eliminates that factor.

The treatment of exophthalmic goiter by a specific cytotoxin and possibly antitoxin, as carried out by Drs. Rogers and Beebe, of New York, was easily the feature of the meeting. The serum is prepared by injecting rabbits with the nucleoproteids and thyroglobulin from thyroids of cases of exophthalmic goiter or from organs of normal individuals. Some remarkable results have been obtained by injecting this serum into patients suffering from Graves's disease, not only by the observers mentioned but by other who have been supplied with the serum. In a few acute, fulminating cases the effect has been almost immediate; in the more chronic types a relatively long time is needed for the serum to act. Rogers reports 41 personal cases with 8 cures, 25 improved, 6 no results, and 2 deaths. Of 28 cases treated by other physicians, 3 were cured, 16 improved, and 9 were not benefitted. If this method of treatment stands the test of time and yields what it now promises, it is a remarkable advance in serum treatment.

The action of the roentgen-rays received considerable attention. Studies by Dr. D. L. Edsall demonstrate the power of this agent to produce toxic effects in persons upon whom it is used. He still looks upon its action as due to the acceleration of the action of ferments already in the body instead of the generation of a new substance. Dr. J. A. Capps demonstrated by means of leukolytic serum from a leukemic patient treated by the rays that they possess distinct destructive action upon the cells of man and animals through the medium of the serum thus secured. Injection of this serum into a leukemic patient apparently produced temporary beneficial results but was always followed by return to the old condition.

The possibility of the prevention and even the cure of relapsing fever by a serum produced in animals, especially rats, by the injection of cultures of the spirillum of Obermeier was foreshadowed by Dr. F. G. Novy, who has been studying the spiral organisms. He believes the organism of relapsing fever is different from that of the African tick-fever and is entirely opposed to Schaudinn's view that the spiral organisms are protozoa; he gave reasons for regarding them as bacteria.

The advantages of a refined and concentrated diphtheria antitoxin were explained by Dr. W. H. Park, who also gave the technic of preparing it. The results in more than a thousand cases indicate that when it is used the rashes and other deleterious effects occur much less often and are on the average less severe than when the usual form is administered.

An experimental study of cerebrospinal meningitis by Dr. Simon Flexner promises elucidation of some points regarding the action of the causative organism. In at least one case of the disease produced in monkeys, there was quite definite evidence that the cocci, introduced into the lower part of the spinal canal, extended to the cord and base of the brain as in human beings, and then passed from the meninges into the nasal passages. This is exactly the opposite direction the organism is supposed to take in human beings and is of considerable interest in connection with the entrance of the infection.

A number of cases of splenic anemia, aplastic anemia, leukemic Hodgkin's disease, and similar affections were reported. The discussion brought out the fact that these blood diseases are yet in a state of the utmost confusion as regards our classification of many of the cases.

Very many points of treatment were brought up by the papers, especially in discussion, and this proved a restrictive feature. As a whole, Dr. Billings is to be congratulated on the immense amount of really valuable material presented at the meeting. The sessions were unduly long but interest never flagged.

Tuberculosis Antitoxin.—Ishigami of Tokio announces the discovery, as the result of a year's experiments, of an antitoxin against tuberculosis which does not not cause a rise in the temperature of the patient. He reports absolute cures in about one-third of the patients upon whom it was used, but says it is not indicated in advanced cases.

ORIGINAL ARTICLES.

THE ACTION OF QUININ UPON THE TERTIAN, QUARTAN, AND AESTIVO-AUTUMNAL MALARIAL PLASMODIA.[1]

BY
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Manila, P. I.

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Pathologist and Bacteriologist to the U. S.
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[*Concluded from page* 13.]

STAINED PREPARATIONS.

In blood smears stained by the method described, (see Note) the protoplasm of all species of the malarial plasmodium stains a robin's-egg blue, the chromatin a brilliant red, while surrounding the chromatin is always present an unstained area, circular in outline, probably representing a portion of the nucleus. In the young "ring forms" this unstained area should be clearly distinguished from the area within the "ring," which is much larger and takes the stain as does the the remainder of the erythrocyte, thus proving that it is but a portion of the latter. In the half grown plasmodia this unstained area is much increased in size and within it lies the chromatin prior to division.

The morphologic changes produced by quinin in the plasmodia of malaria are very clearly demonstrated by this method of staining and are much more marked than one would suppose from the descriptions which have been published. Romanowsky's[20] work upon stained specimens, is, by far, the best contribution which I have seen upon this subject, and my observations confirm his in many respects, but I have been unable to demonstrate that the chromatin of any of the species of plasmodia loses its staining properties, but on the other hand, I have found that this important portion of the nucleus stains as well, and in many instances, even more intensely, after the administration of quinin than before. While this is true, it was invariably noted that the unstained area surrounding the chromatin had disappeared and in those plasmodia which continued their developmental cycle, the chromatin had either failed to divide or divided imperfectly, many of the segments showing no chromatin.

In those plasmodia which perished prior to sporulation the chromatin was situated in some portion of the deeply stained protoplasm and showed no evidence of division.

Mannaberg[21] describes the production of spores which possess no chromatin, but claims that the chromatin loses its power of staining while Zieman[22] found that the chromatin remains normal in appearance and divides as usual. The latter statement can only be true in those cases in which quinin is administered just at the time of sporulation, for if given while the plasmodia are developing the vast majority of the organisms which live to sporulate present either no evidence whatever of division of the chromatin, or division, if present, is imperfect, only a very few of the segments showing any chromatin.

The Tertian Plasmodium. (*Plasmodium vivax.*)—The morphologic changes produced by quinin in the tertian plasmodium, as shown by stained specimens, will first be described.

In order to study these it is necessary to give the drug in divided doses to single tertian infections, the first dose just before segmentation; specimens of the blood should then be taken and stained at intervals of every three hours for the next 48 hours. Given just before segmentation and repeated at intervals of three hours, the drug acts upon the plasmodia not only while free in the plasma but also upon every stage of their human life cycle, and it is thus possible to study the morphologic changes produced by quinin in every stage of their development.

The young "ring forms" stain very intensely after the administration of quinin, the protoplasm staining a much darker blue than normal, while the chromatin stains a dark crimson. Besides the increase in the intensity of the stain, the only other morphologic change observed is the loss of the unstained area, which, in normal specimens, always surrounds the chromatin.

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[1] Published with permission of the Chief Surgeon of the Division of the Philippines, Manila, P. I.

In tertian plasmodia a little further advanced in development, the staining reactions are the same as in the ring "forms" but the increased motility of the parasites is shown in the great number and the "bizarre" arrangment of the pseudopodia. Fragmentation is observed even before the formation of pigment, some of the plasmodia at this stage being broken up into deeply stained portions, the chromatin lying in one of these portions or free near the periphery of the erythrocyte.

After the formation of pigment, and especially after the plasmodia are from one-half to three-quarters grown, the evidence of fragmentation and of extrusion of the chromatin from the parasite become more marked. Many of the erythrocytes contain portions of deeply stained protoplasm, the chromatin of the plasmodium lying free at some portion of the red cell. The latter is often situated at the extreme periphery or partly outside of the erythrocyte.

At this stage numerous extracellular plasmodia are seen, either undergoing fragmentation or hydropic degeneration. Many of the fragments are entirely devoid of pigment, staining a uniform deep blue throughout, while some may be almost filled with pigment granules. The unstained area about the chromatin is always absent, nor is there any indication of an increase in the amount of chromatin which is so noticeable in the normal plasmodia at this stage.

While at this stage many fragmented plasmodia are usually observed, in some instances no evidence of this process is seen. The protoplasm stains a uniform dark blue, the pigment being collected, as a rule, about the periphery, while the chromatin stains intensely and may be situated at any portion of the organism but usually near the periphery. There is no unstained area surrounding the chromatin.

In many instances the chromatin is situated at the extreme periphery of the plasmodium or may lie partly or wholly outside of it within the erythrocyte, thus proving that quinin possesses the power of causing extrusion of the chromatin, thus rendering the plasmodium sterile.

Together with the absence of the vesicular portion of the nucleus as shown by the loss of the unstained area surrounding the chromatin, there is but seldom, even in those organisms which are not undergoing fragmentation, any evidence of increase of the chromatin, and never any evidence of its division.

When the tertian plasmodium is nearly full grown, quinin very often causes fragmentation, many of the fragmentated organisms being free from chromatin, but the characteristic change from the normal at this stage of growth consists in the fact that although the chromatin may be present and stain very intensely, it has increased but little or not at all in amount, and division is either absent or imperfect, only two or three small masses being present which lie close together, near the periphery of the organism. In tertian plasmodia which have not been influenced by quinin, and have reached this stage of development, the chromatin has always increased largely in amount and divided into several small clumps, which are scattered throughout the organism. The morphology of the plasmodia at this period of their growth indicates clearly that quinin prevents an increase in the amount of the chromatin and either hinders division or stops it altogether.

At this stage the protoplasm of the organism stains deeply and the pigment is collected about the periphery in blocks or granules, or distributed throughout the protoplasm in the form of fine granules or small clumps.

The unstained area about the chromatin is always absent. Those plasmodia which sporulate after having been exposed to the action of quinin throughout their entire cycle of development, present very marked morphologic evidences of the injurious effect of the drug. While sporulation may not be entirely prevented, the majority of the spores are devoid of chromatin, and are undoubtedly sterile. The segments are also greatly decreased in number and may be distorted in shape, while in the segments which show the presence of chromatin the latter is in the form of irregular masses, very distinct from the usual form as seen in normal plasmodia. Very often sporulating bodies are observed in which only two or three of the segments possess chromatin; in such segments the protoplasm stains a deep blue and there is no unstained area surrounding the chromatin.

Associated with the chromatin containing segments are from six to eight, or perhaps more, deeply stained segments containing no chromatin.

In the segmenting plasmodia, the pigment, instead of being collected in a dense compact mass, as is the rule in the normal tertian plasmodia, is reduced in amount and scattered in small clumps or granules, between the segments.

From the morphologic changes described it is evident that quinin, administered in divided doses, exercises a markedly injurious effect upon every stage in the human life cycle of the tertian plasmodium, either causing the death of the organism at some period of its development, or preventing normal sporulation by restraining the division of the chromatin prior to segmentation. The death of the organism is evidenced by fragmentation or the extrusion of the chromatin, while the effect upon sporulation is shown by the limited division of the chromatin and the large number of segments which are devoid of this essential portion of the nucleus.

If quinin is administered in one large dose, which is not repeated, at any stage of the development of the tertian plasmodium prior to segmentation, the changes produced are the same in kind as those already described, but a comparatively large number escape entirely or are but little injured.

When quinin is administered just prior to segmentation, it does not, as has been proved by numerous authorities, prevent segmentation nor do the stained preparations show any distinct morphologic changes in the segmenting bodies.

The Quartan Plasmodium. (*Plasmodium malariæ.*)—The changes produced by quinin in the quartan plasmodium, as shown by stained preparations, are the same as those described for the tertian plasmodium, and I cannot agree with Golgi[23] and Antolisei that upon the adult quartan plasmodium the drug has no effect. I have not been able to observe any difference, so far as morphologic evidence goes, in the effect of quinin upon the tertian and quartan plasmodia, although it is undoubtedly true that because of greater resistance to the drug, a larger number of quartan plasmodia escape destruction at the time of sporulation.

The Aestivo-Autumnal Plasmodia. (*Plasmodium immaculatum.*)—I have not been able, as yet, to study the effect of quinin upon the full grown or segmenting æstivo-autumnal plasmodia, but have studied many specimens containing the "ring forms" and the young pigmented forms. The results of my observations are opposed to those of Marchiafava and Bignami,[24] who claim that no morphologic changes are produced in these plasmodia by the drug, and that the unpigmented parasites do not become pigmented after its administration. I have repeatedly seen pigmented forms of both the tertian and quotidian æstivo-autumnal plasmodia develop after quinin had been administered for as long as three days, while the morphologic changes produced are similar, but not as marked, as those observed in the tertian and quartan plasmodia.

In the "ring forms," which are most easily studied, the staining capacity of both the chromatin and the protoplasm is increased, but the unstained area surrounding the chromatin disappears. A large number of the "ring forms" may appear normal but careful examination will always show that numerous parasites show the loss of the unstained area and the "rings" are distorted in shape owing to increased ameboid movement. In a few instances I have observed the separation of the chromatin from the body of the plasmodium, thus showing that extrusion had occurred. I have never observed fragmentation of the "ring forms."

The changes produced in the young pigmented æstivo-autumnal plasmodia are similar in every respect to those occurring in the tertian and quartan plasmodia, consisting in fragmentation, loss of the unstained area surround ing the chromatin, and extrusion of the chromatin.

Quinin has no effect upon the morphology of the crescents.

Occurrence of Granular Degeneration. (*Polychromasia and Basophilia.*)—As is well known, many of the erythrocytes, in severe cases of malaria, present the phenomena described as polychromasia and basophilic degeneration. This is evidenced by areas in the cell or the whole cell staining a brownish color or the cell is filled with granules which are basophilic in character and when stained by the method described in this paper, present the same staining reaction as does the chromatin, although the color is very much less intense. In my observations I have found that polychromasia and basophilic degeneration are greatly increased after the administration of quinin, and this is especially true of the parasite infected red cells. It is the rule to find the great majority of the erythrocytes containing plasmodia undergoing basophilic degeneration, the so-called "stippled cells." This fact would indicate, that while polychromasia and basophilia may be produced by infection of the ertyhrocyte by malarial plasmodia, since these conditions are frequently present, quinin is also capable of thus injuring the red cell, and that this action is most marked upon the cells infected by the plasmodia. It is also evident that the mere entrance of the plasmodia into the red cell does not protect it against the action of quinin, as was for a long time believed by the advocates of administering the drug in a single large dose before the expected paroxysm.

The exact nature of polychromasia and basophilia is as yet a matter of controversy, some authorities regarding the process as degenerative in nature, while others maintain that it is not of necessity a regressive process. It is not advisable here to consider the arguments as to the significance of these basic staining granules, but it would seem that so far as the study of the process in malaria is concerned, the evidence all points to its degenerative nature. These forms of degeneration of the erythrocyte occur also in all severe anemias and in many other disease processes and have been thoroughly studied by many observers, notably Maximow,[25] Askanazy,[26] Litter,[27] Bloch,[28] Zenoni,[29] Fisch,[30] Cabot,[31] Ewing,[32] Schwalbe and Solley,[33] Grawisz,[34] and Stengel, White, and Pepper.[35]

The only observations regarding the significance of basophilia of special interest to the student of malaria are those of A. Plehn.[36] He suggests that the granules which are basophilic in character and which are observed in the red cell in malaria, are, in reality latent froms of the plasmodia. He believes that multiplication of these latent forms occurs in the blood, followed by destruction of the red cells, which process continues until conditions are favorable for the development of the large ameboid plasmodia. He also states that after the disappearance of the ameboid forms these latent bodies remain, continuing as the latent form of the plasmodium.

The observations of Plehn have not been confirmed by any observer, while on the other hand, all those who have studied the subject unite in considering the polychromasia and basophilia of malaria as identical with that occurring in other diseases.

Solley[37] from his studies of tertian malarial blood only found granulation of the red cell in two out of thirty cases, and concluded that there is no evidence that the granulations are latent malarial plasmodia.

I have observed basophilia in a very great number of specimens of malarial blood, and agree with Solley that there is no evidence whatever that the granulations are a form of the malarial plasmodium.

As stained by the method described such granulations take a red color, and the erythrocyte showing this change appears to be composed of a multitude of red dots surrounding the invading plasmodium, which stains as has been described.

To believe that the erythrocyte thus contains a growing ameboid plasmodium as well as numerous latent forms is impossible, and when it is remembered that identical granulations occur in the erythrocytes in numerous other diseases I believe that Plehn's hypothesis cannot be supported by the phenomena observed.

Effect of Quinin Upon Conjugation.—In a previous contribution I have described a form of intracellular conjugation occurring in the malarial plasmodia which I consider to be of the greatest importance in the human life cycle of these organisms, especially in maintaining the malarial infection. The process consists in the union of the young hyaline parasites, followed by fusion, and the development of a single organism which undergoes the usual periods of growth and sporulation. The conclusions which I have arrived at after a study of these conjugating forms may be briefly stated as follows:

(1.) Intracorpuscular conjugation is always present in acute initial attacks of tertian, quartan, and æstivo-autumnal malaria, almost invariable present in recurrent attacks, and almost never present in latent infections.

(2.) It has, in the vast majority of cases, a direct relationship to the severity of the clinical symptoms.

(3.) It is not absolutely essential to sporulation or to the appearance of clinical symptoms.

(4.) It is essential to the maintenance of autoinfections and its disappearance results eventually in spontaneous recovery.

(5.) It is a process intended to preserve the reproductive power of the plasmodia by "rejuvenescence" thus preventing their death.

Upon this process of conjugation quinin has a fatal influence for, after the administration of this drug, conjugating plasmodia entirely disappear and do not reappear unless the administration has been stopped, and then only after an interval of days or even weeks.

Even in those instances in which the drug is given in such small doses as to injure but slightly the developing, plasmodia the conjugating organisms quickly disappear.

As the process of conjugation is undoubtedly intended to assist in maintaining malarial infection by rejuvenating the plasmodia, the very marked action of quinin upon the process offers another explanation of the efficacy of the drug in curing these fevers.

Practical Deductions.—The most important practical deduction to be drawn from the study of the action of quinin upon the malarial plasmodia is that, in order to secure the best therapeutic results the drug should be present in the blood continually and therefore should be administered in divided doses at regular intervals of time.

A great deal has been written regarding the administration of quinin in the treatment of malarial infection, some authorities maintaining that it should always be given in divided doses, while other claim better results from the administration of one large dose before the expected paroxysm. It is not necessary to discuss at present the many contributions dealing with this subject, but those interested should consult the very valuable paper of Dock[39] which contains a summary of the opinions of the various writers upon the administration of quinin in malaria.

As shown, however, in this study, quinin acts injuriously upon the plasmodia in all stages of their human life-cycle, with the possible exception of the large full-grown plasmodium just prior to segmentation, and thus to secure the best results, the drug should always be present in the blood. Given in divided doses at regular intervals the blood constantly contains a sufficient quantity practically to stop the development of the plasmodia which have succeeded in escaping it while free in the blood plasma and recovery is thereby hastened.

The practice of giving quinin in the manner mentioned is not only justified by the morphologic changes in the plasmodia herein described, but its value is proved by practical experience. I have at present the records of over four hundred cases of malarial fever, observed in soldiers returning from the Philippines and in the Philippines, including tertian, quartan, and æstivo-autumnal infections, in which quinin was administered in doses of .50 gms. every three hours until from 1.50 to 2.00 gms. were taken and in all these cases, recovery was prompt and occurred more quickly than in similar cases in which one large dose was administered prior to sporulation. In the tertian cases it was but very rarely that a second chill occurred, although in about 20 percent of the cases a rise of temperature was noted upon the day of the expected paroxysm. In the quartan cases a second paroxysm never occurred after the beginning of the administration of quinin in this way, while in the æstivo-autumnal cases, which comprised nearly two-thirds of the total number, the temperature, except in two pernicious cases, reached normal in from two to three days and recovery occurred.

It is in the latter type of malarial infection that the administration of quinin in divided doses is especially efficient, for in this type it is generally impossible to tell the exact time of the ensuing paroxysm, and thus it is impossible to attack the parasites while they are free in the blood plasma by the administration of one large dose of the drug.

CONCLUSIONS.

From these studies upon the action of quinin upon the plasmodia of malaria I believe the following conclusions are justified:

(1.) Quinin exercises an injurious effect upon the plasmodia of malaria during all stages of their human life-cycle, whether intracorpuscular or extracorpuscular except when it is administered just prior to sporulation, at which time the sporulating body is not injured and sporulation occurs but most of the spores are destroyed by the drug while they are free in the blood plasma.

(2.) The marked morphologic changes, degenerative in character, produced by quinin in all species of the malarial plasmodia, during all stages of their growth, prove that in order to secure the best therapeutic results the drug should be continually present in the blood, and this is only possible when it is administered in divided doses at regular intervals of time.

Note.—The following method was used in staining the plasmodia to demonstrate the action of quinin.

Staining Solution.—Add .5 gm. of sodium bicarbonate to 100 c.c. of distilled water, dissolving thoroughly, and then add 1 gm. of methylene blue (Grubler's) and heat for one hour in an Arnold sterilizer after the steam is up. After heating allow the solution to cool. Make a 1 to 1000 solution of yellow aqueous eosin (Grubler's) and add this, while stirring, to the cooled methylene blue solution in the proportion of 500 c.c. of the eosin solution to 75 c.c. of the blue solution. This should be done in a large white porcelain dish. A metallic scum should form on the surface of the mixture after standing for a few minutes. The mixture should then be filtered through one small filter paper and the residue saved. The filter paper containing the residue should then be dried in a hot air oven and the precipitate, which is in the form of a fine powder having a greenish metallic luster, carefully removed and preserved.

To prepare the staining fluid, take .3 gm. of the powder and add it to 100 c.c. of pure methylic alcohol (Merck's reagent). The mixture should then be filtered and to 80 c.c. of the filtrate 20 c.c. of methylic alcohol added. The solution is now ready for use and can be kept indefinitely.

Method of Use.—To stain, add a few drops of this solution to the preparation to be stained and let stand for two minutes; then add enough distilled water to cause a slight metallic scum to form on the surface of the fluid; let stand from two to five minutes, wash in distilled water and examine at once or mount in balsam.

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THE TENT SANATORIUM FOR CONSUMPTIVES.[1]

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It may be only the preference which each man-at-arms instinctively has for the weapon which best fits his own hand, but it does seem to me that the open air tent sanatorium ought to be made the heaviest gun and standard rifle combined in the warfare against tuberculosis. First of all because it is the only method by which a majority of cases of the disease can be arrested, and permanently arrested. I say this deliberately and with full knowledge of the admirable alleviations of symptoms and temporary improvements which can be obtained by treating patients in their own homes.

The sanatorium is superior to the best private treatment that can be given not only in the high percentage of its cures but also in the far greater permanence of them. It is almost impossible to make a patient, whether he belong to the class of the foolish rich or the stupid poor—and they are about equally frequent, follow out the discipline, obey the rules, and remain under control long enough to push the treatment to its fullest possible results in a private home. You have to fight not only the patient himself, who is a handful, yes an armful, but all his well-meaning relatives and every dear old mother in Israel in the neighborhood, who on the strength of having had ten children, and lost five of them, is believed to be more competent than any doctor to advise about little matters like diet, bathing, exposure, etc.,---He will "catch his death of cold" sitting out in the damp, or sleeping out in those draughts---or "all those eggs will sure make him bilious;" or, "he ought to get up and expand his lungs;" or such a rapid gain in flesh is "onhealthy."

Patients *can* be cured in their own homes, but even under the best and most favorable surroundings these cures are apt to be but a temporary hemming in within a wall of fibroid tissue of from one to a dozen colonies of the invaders, who only wait the first available opportunity to break through the cordon again and attack the tissues of their host. Moreover the treatment is infinitely more economic, because it takes so much less time. I have no hesitation in saying that, in my experience, as much improvement can be got in a week under sanatorium treatment as is usually possible in a month under the most careful open air treatment in private homes, under the most favorable circumstances.

The reasons are twofold: First, patients are placed under conditions so ideal that they can be realized with difficulty in the very best of private homes or grounds, as to exposure, food, freedom from observation, and the visits of kind, but troublesome friends. It is really surprising how great a practical difficulty in getting a patient to carry out the open air treatment at home, consists in his inherent shrinking from seeming to make a spectacle of himself for the curious among his friends and the passersby.

The second and not least weighty reason is that when once you have established a group of patients beginning to improve, and believing in the discipline, they will take the new patient in hand and train him into line with a fervency which needs checking rather than encouraging, much in the same way as the Sophomore religiously passes on to the Freshman the same crude but supposedly salutary lessons, which have been rubbed into him, in the form of hazing, in his infant year.

It is not too much to say, on the basis of the latest German statistics that the majority of sanatorium arrests or practical cures, are permanent. The majority of arrests secured in private homes are temporary.

Another reason why the sanatorium method should be relied upon as a chief factor in our campaign is that it is a step in the direction of health, vigor, happiness and enjoyment of life. It is the getting away from the house obsession, the idea that indoors is the natural dwelling house of the race, a relic of the cave man and of the fortress and cloister of the Middle Ages. While fully recognizing the value and necessity of the magnificent work being done in treating the tuberculous poor in their homes, teaching them how to strive for more healthful methods of living and to protect themselves against the spread of the disease; I believe that such work is a mere makeshift, temporary, and should be only regarded as the stepping stone to the transporting of all these subjects to open air surroundings. Further, I believe it is in one sense a mistake in principle to endeavor to treat these patients in their own homes, especially while they remain engaged in their occupations; for we are thereby encouraging them, and making it possible for them, to remain in conditions *which should never be tolerated as the environment of human beings.* Most of the work spent in improving the slums would be better spent in abolishing them altogether. Nor is this merely a counsel of perfection or roseate dream. Years ago, during my student days in London, no less hard headed a body than the London County Council decided that it would build no more model tenements, or blocks, for the housing of the poor within the limits of the city; but that when it broke up a slum, that slum should be wiped out of existence, and its site turned into parks, streets, open spaces or business buildings, and the former inhabitants provided for in a colony or group out in the suburbs, upon an electric or steam road, giving rapid transit at low fares. The Peabody Trust has come to the same conclusion within recent years. Just as French cookery is said to be the rendering attractive and edible that which should never be eaten, so much of our work in the improvement of the slums has been in the direction of making tolerable an environment which should never be tolerated for a moment. The slum, like Carthage, "*delenda est.*"

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[1] Read before the National Conference of Charities and Corrections, Portland, Ore., July 17, 1905.

It is the slum surroundings *which have made these poor people tuberculous*, and instead of being encouraged to remain in them, they should be got out of them at the very earliest opportunity and encouraged to remain out.

But some one will say at once "Think of the enormous expense" and this brings me to the most weighty reason for the preference of the tent form of the sanatorium, and that is its inexpensiveness.

On a recent tour of inspection of the open air sanatoriums of the middle west and the east, made by my friend and colleague Dr. Luther Stevens, Secretary of the Iowa State Association for the Prevention and Study of Tuberculosis, and myself, we were both amused to find, on comparing notes at the end of our trip, that the one thing which had impressed us most discouragingly had been the enormous individual expense per patient which seemed to be thought necessary for the equipment of these institutions. This we find to range from $1000 to $3000 per capita, and no city or municipality seemed to dream of attempting to establish a sanatorium with less than from $50,000 to $250,000.

In view of the fact that *two-thirds of the money which is spent in constructing permanent buildings for the cure of the tuberculous is spent in overcoming the fact that they are buildings*, this seems a regrettable waste.

This is by no means the desire of the devoted men who are conducting and managing these institutions, but for reasons beyond their control: One is that in institutions supported by private benevolence. it is easy to get money for attractive memorial cottages and beautiful buildings; bearing the name of the donor. In state supported institutions big expensive buildings, affording a fat contract and a rakeoff for the friends of the politicians are almost a *sine que non* in the obtaining of the appropriation.

When we consider that patients can be accommodated in tents, inclusive of the cost of the land, the providing of a supply of water, the building of a central cottage with dining room and kitchen, containing rooms for the staff, at an expense ranging from $125 to $200 per patient, it will be seen what a serious obstacle they are placing in the way of the rapid spread of the sanatorium idea. This has been demonstrated repeatedly, nowhere more notably than by Dr. Pettit in his splendid tent colony at Ottawa, Illinois, under the auspices of the Illinois State Medical Society. Here is a colony of forty tents, which has been established at an expense of a little more than $150 per patient, including all equipment, rent of land

and water supply, and is made to pay its way, supporting itself, on a charge of $12,00 per week, Dr. Pettit's services, of course, being given free.

I would like to relate the experience of our own local tent sanatorium here in Portland as an illustration of what may be done in any city of more than 10,000 population, in any climate, in the United States. About a year ago, while Secretary of the Oregon State Board of Health, it appeared to me that the best and most effective method of educating the public and arousing them to a campaign against tuberculosis, was to establish an object lesson in the form of an open air sanatorium, to demonstrate that tuberculosis was curable, and curable in this climate. At that time there was an almost universal skepticism upon this point; not merely the laity, but also the bulk of the profession. having plentiful lack of confidence in the possibilities of the wet Oregon climate for the cure of tuberculosis. A committee was accordingly appointed by the State Board of Health, and another by the local Medical Society, of both of which I was a member. A list was prepared by these gentlemen of the prominent business men and philanthropic women of Portland, who were approached and induced to lend their support to the enterprise, and 18 volunteers were secured, who in addition to the original committee of six formed the board of trustees and incorporators of the sanatorium, and the institution was incorporated as a benevolent institution. As soon as this was done, indeed before the articles of incorporation were completed, subscription lists were circulated and the sum of $3000 was raised. After an exhaustive exploration, 14 acres of land were secured about five miles south of Portland, within ten minutes walk of an electric car line, situated upon a high bluff overlooking the Willamette river, at a cost of $1800. The land was covered with dense brush and small timber, with a rough rocky surface but with good drainage, southwest exposure and some timber shielding it from cold winds on the Northeast. The clearing and laying out of walks and roadways cost about $700. A water supply was secured from a good spring about a quarter of a mile away by means, first, of a wind mill and later a gasoline engine. This cost in the neighborhood of $1000. Then a small cook shanty was erected, a group of six tents built and the institution was opened for business on January 5, 1905, with three patients, a nurse and a cook. The struggles of the early days in getting a staff of workers was something terrific. Most of the nurses who applied for the position, when actually confronted with the situation, were afraid to go out on account of possible infection, and if they happened to consult their family physician, when in a state of indecision, they were promptly decided against it. Our first patients were all in the third stage, but gradually we began to get more suitable cases, the colony began to grow, until by the middle of May it had increased to 25 tents with 35 patients, a resident physician, Dr. E. N. Crockett to whose devotion and enthusiasm much of the success of the treatment has been due, two nurses, a Japanese cook and four other servants, who took care of the tents, waited upon the table, etc. Up to this time 81 patients have been received into the sanatorium for a greater or less length of time. Of the 75 received up to July 1, 47 were in the third stage, many of them being received simply because they had come a distance of from two hundred to five hundred miles in order to get a last chance for their lives, and we had not the heart to refuse them. This class of cases has given us some of our most gratifying and unexpected results, though of course the percentage of cures has been low. Of the 39, third stage patients remaining more than two weeks in the institution, two have had the disease completely arrested, six are much improved, and will probably reach complete arrest, while nine have been greatly improved thus giving an improvement rate of over 40 percent.

From our experience I should be decidedly in favor of admitting these cases to the sanatorium with the understanding that we could promise them nothing, and that unless distinct improvement showed itself within two weeks, they were to return home. I am really coming to hesitate to regard any case of tuberculosis as hopeless. Although the percent of recovery will be small, yet it is almost impossible to tell which case will come within that happy number. In the first and second stages the results of course have been much more satisfactory. Of the 15 second stage patients, 7 have had complete arrrest of the disease, 5 have been much improved, 2 improved, while one left in less than 2 weeks. This gives an improvement percentage of nearly 85 percent, which curiously enough, is slightly superior to that of the first stage cases, of the 13 of which, 4 have made complete arrest of the disease, 4 others are much improved, 3 are improving, and 2 left under two weeks.

To sum up then, out of 64 patients remaining more than two weeks in the Sanitorium, in six months time, 7 have had the disease completely arrested (these by September 1, had increased to 15), 15 have been much improved, 14 are rapidly improving; an improvement rate of over 60 percent, so that we feel that it has been demonstrated that the same sort of results are obtainable in this climate as are to be had in any other part of the United States.

The total expense to date, for land, water supply, cottage and tent accommodations for 40 patients, has been in the neighborhood of $7,000.00, a cost of about only $175.00 per patient. Patients are housed in tents with tight matched board flooring and wall 3 feet high, 12 ounce duck tents with 4 foot wall above, making a wall of 7 feet in height, and over all a 10 ounce duck fly projecting 6 feet in front of the opening of the tent and thus forming a canvas porch. Each of these tents is 14 x 18 feet, accommodates 2 patients, and costs about $55.00, less than one half the expense per patient that can be figured down with any form of board shack, shanty, or cottage, however simple.

These are heated by small wood-stoves, and at bedtime the flaps are closed, fires lighted, and the tents warmed up for the patients to undress. After they have undressed and retired, an attendant comes and throws the flaps wide open. In the morning, he returns, closes the flaps and lights the fire, and as soon as the tent is warmed, the patients rise and dress.

Patients are not allowed to be in their tents during the day except in extreme cases. At first of course, in our exceedingly rainy winter climate, the patients were in deadly terror that they would catch their death of cold, but it was soon found that the only danger to be apprehended from rain was that of its driving patients indoors, and they could lie out in the day in sleeping bags, with hot bottles at their feet, or sleep all night with every wind of Heaven blowing through the tents and across them, without the slightest danger and with rapid and enormous improvement.

Dr. Pettitt found just the same results in his Tent Colony in the savage and rigorous climate of central Illinois. Patients slept out in open tents with the temperature as low as 20° below zero, refusing to go into the wooden shelters which were provided for emergencies. Some of them actually had an ear or the tip of the nose frozen, but after learning to put on ear muffs and cover up the head, they received no further injury of any sort from the exposure.

We began by charging a rate of $5.00 a week for patients residing in the county, but our expenses over ran this so much that we were obliged to raise it to $10.00. We decided to charge a rate for two reasons; first to make the burden upon the subscribers less heavy, and second to prevent pauperization of the patients. Under no circumstances would I be willing to conduct a *free* sanatorium for consumptives.

We have been most agreeably surprised at the small number of instances in which it was necessary to refuse patients on the ground of lack of funds, except in subjects with objectionable moral or physical habits, and these we would not have received on any terms. I have come to the conclusion that any individual who cannot succeed in getting some friend, employer, or associate to put up $50.00 or $100 to save his life, has by that fact, pretty well demonstrated that he is not worth saving. Most of the few free patients which we were inveigled or trapped into admitting, proved to be our most unmanageable, ungrateful, and generally unsatisfactory subjects.

Our expenses per patient per week, ranged all the way from $9.50 to $11.50. This is inclusive of salaries, food, and all expenses. The variations have been due to the often quite rapid changes in the number in residence.

As to methods of treatment they have simply been unlimited rest in the open air and enforced overfeeding. Beginning in the morning with a pint of milk, or from 3 to 6 raw eggs; then at 8 o'clock, breakfast with bacon, ham, fish or meat and fruit, with perhaps potatoes, hot cakes and syrup, and coffee or milk if wanted. At ten, lunch of six eggs, or a pint of milk. At one, a full hot dinner, another lunch at four in the afternoon, and a hot supper with meat, fruit, cake, vegetables at six, and eggs and milk again at nine or just before retiring for the night.

Our standard which we aimed at, and which was realized in fully 75 percent of our cases, was a ration of from one and a half to two dozen raw eggs a day, two quarts of milk and three square meals. Upon these rations, our patients not only did not become bilious, though often fully expecting to from the start, but were relieved of dyspeptic symptoms for which some of them had been treated for months.

The average gain in weight on the patients discharged was 15 pounds, one patient gained as much as 28 pounds, for the improving cases, 10 pounds, while the average rate of gain for patients making any improvement at all was 1½ pounds per week, and upon several dates, as many as 20 patients in the Camp would average a gain of 2½ pounds each, for one week.

The greatest difficulty was ound in getting the patients to take the raw eggs, as they usually remonstrated strongly against the very idea of them, but all we found necessary, was a little judicious firmness and the avoidance of sugar, milk, whiskey, or other flavoring elements with the eggs. Although these latter were sometimes used as a sort of coating for the pill at the beginning, if persisted in, they defeated our aim at "high potencies" of egg. I am fast coming to the conclusion that there is practically no possibility of inveigling too much proteid food into the stomach of a consumptive. It seems to be almost entirely a question of how much you can induce them to swallow. Nature will do the rest. And when they are once fairly gaining weight, as Osler says, we may leave the lungs to take care of themselves. Practically no drugs whatever were administered excepting an occasional purgative and a very occasional sedative or expectorant to check cough during the first few nights and permit sleep. Usually however, we found that the bowels were admirably regulated just by the large bulk of food ingested, even in those who had been of constipated habit before. Increasing the amount of the raw eggs seemed to have a laxative effect on the bowels, while diminishing these, and increasing the milk had a checking effect upon any undesirable looseness which appeared.

One of the most agreeable surprises and gratifying features of our experiment was the extraordinary rapidity with which distressing symptoms like cough, expectoration, nightsweats, and sleeplessness would disappear in the open air. Rarely would nightsweats persist in patients who were susceptible of any improvement, more than three or four nights. Persistent, hacking, racking cough, of two to four months' duration would disappear in from 3 to 5 days. Expectoration would fall from one-half pint in 24 hours, to one or two drams. In fact, it was a matter of frequent comment by visitors to the Camp that they never heard anyone cough while they were there.

This greatly simplified the disposal of the sputum, which we expected to be one of our most troublesome details. We began by issuing gauze handkerchiefs for those who were able to be about, and sputum cups for those confined to their tents, but the former were found to be too porous and the latter unnecessary, and our final sputum receiver was one of the simplest, a folded newspaper. We secured the old papers from the city library. These were then torn into sections of three or four sheets by each patient, then folded upon themselves three or four times so as to make a small booklet about 4 inches by 6 and all "closed" leaves cut open. This, the patient could readily slip in his pocket or carry under his arm. When he wished to expectorate, he opened the booklet and used the space between two of the leaves. When a fair number of the pages of this novel herbarium each contained their respective botanica specimens, the booklet with its contents was simply dropped into the nearest stove. As the central leaflets were used first, the booklets were found to be practically moisture proof and the patients greatly preferred them to either gauze, old cloths, or cups, or flasks of any description. Patients of course, were kept absolutely at rest in the open air day and night until the temperature fell below 100°. After that, until it came to normal, they were allowed to sit and walk slowly about the camp, but forbidden to take active exercise.

A large wooden box or small chamber 8 x 10 was constructed in which all the clothing, sheets, etc. were thrown over racks and sterilized by formalin over night before being sent to the laundry.

Quite a number of our patients were received with the intention of giving them a thorough training in the open air treatment and then allowing them to continue it in their own homes. Many of these made good recoveries later, though none gained at all as rapidly in their own tents as they had done in the sanatorium. One of the most important elements in the cure we found to be the intelligence and courage of the individual patient. We early found that, as Dr. Pettitt tersely phrased it, "you can't cure a fool of tuberculosis."—Nor is it, from a racial point of view particularly desirable that you should.—The two chief difficulties which we met, apart from the natural ones of administration, were those of ways and means and the question of getting our patients in a sufficiently early stage. As our support came entirely from voluntary contributions, we have been constantly in financial straits, but just as constantly getting out of them. In fact I do not mind confessing that I have left all our financial troubles to the executive committee, and no institution ever had a better one. Month after month I have been unprincipled enough to take care of all the patients who came to us, plunge the institution $1000 in debt, and then shamelessly leave it to the committee to get us out, and they have never failed us yet. Although the general public has responded generously, yet time and again, have we found ourselves in situations from which we were rescued by the members of the committee or their immediate friends and relatives, going down into their own pockets to make good. In fact the only remorse which gnaws at my conscience in connection with the whole enterprise has been the amount and varied kinds of trouble for the executive and financial committee, into which I have inveigled this noble body of men and women. Particularly in the case of our President, Mr. A. L. Mills, who has been the life and soul of the entire movement, and without whom its existence would have been impossible. To work with such men and women makes even difficulties a pleasure.

The other difficulty, that of getting the patients for treatment at a sufficiently early and hopeful stage, is of course world wide. The only remedy for this is better and more thorough education of the members of the medical profession. The disease is of course, exceedingly insidious and difficult of detection in its earliest stages, but it ought to be recognized months earlier than it usually is by the average physician. Failure to do so, is in part due to careless and superficial methods of examination, and in part, I am compelled to believe, from extensive personal experience, from the fact that a large minority of the members of the profession do not even yet believe in the curability of tuberculosis by sanatorium methods. Consequently, the pronouncing of what they believe to be the patient's death sentence, is postponed as long as any possible excuse can be found for it. In both of these regards, the profession is in as urgent need of education as is the public in regard to other aspects of the tuberculosis problem. Fortunately, the movement for improvement and enlightenment is on foot in both classes.

RESECTION OF THE INFRAORBITAL AND SUPRAORBITAL NERVES FOR EYESTRAIN.

BY
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of Philadelphia.

About 30 years ago a little boy began having headaches, disordered digestion, and nausea,—what for hundreds of years has been called "migraine", or in English-speaking countries, sick-headache. Of six brothers and sisters of this patient only one is free from severe "migrainous attacks", or "neuralgia", with vomiting, etc. The mother had these attacks also. The father had giddiness for years before his death, attributed to "arteriosclerosis". The boy's headaches and nausea, with other common attendant symptoms, kept up through his boyhood and youth. He never could swing in a swing or hammock, nor run round and round in children's games, and even hard play or running would bring on the frontal headache and nausea. His eyes always caused him peculiar troubles—*e.g.* he could not look at a speaker long at a time, and he had to keep his eyes moving or closed. Reading always produced pain behind the eyeballs, extending to the upper and middle branches of the fifth nerve. At the age of 16 the boy began the study of medicine, and at 18 entered one of our large medical colleges in Philadelphia. He had read so much that every one said he had hurt his eyes. The habit of "blinking" had persisted from childhood. In 1886 he consulted a wellknown oculist, but there was no lessening of his symptoms by the glasses ordered; he could now read but little, and not at all at night. He depended upon a good memory with readiness in learning, and so attended lectures and did his dissections rather than studied books. He was graduated in 1888 and soon took up active practice in a distant State. Except during short periods when incapacitated by surgical operations, etc., he has continued his work as a physician in spite of the terrible suffering since endured almost every day. From 1889 to 1892 he drank a great deal of whisky, but has not done so since then. In 1895 the anterior superior spinous process of the ilium was fractured, followed by some peritonitis, and in 1898 typhoid fever ensued with another attack of peritonitis. Partly to lessen the pain of the first inflammation, and more, I suspect, to conquer persistent insomnia, opium, "about two grains a day", was ordered, or at least taken, and finally this was replaced by chloral, amounts indefinite, but large. These drug habits were continued for about two years, then were wholly renounced. The digestion was disordered, there were "pasty stools"; his heart was weak, and he sometimes "fell down from exhaustion", "loss of power in the legs, etc." Sexual power was lost, but "desire correspondingly increased." There were skin-eruptions and "blotches." After a month in the mountains he came home "cured". About ten years ago the nausea turned into real vomiting after attacks of severe pain, neuralgia. headache, etc. In 1900 the patient began taking occasional doses of cocain, soon more frequently and in larger doses, hypodermically. This was stopped in a few months, and not since has there been any resumption of such habits. Even while most addicted to drinking and drug-habits he was carrying on a busy practice, and he is sure the fact was not suspected by his patients.

During all these years his greatest sufferings have been "burning pain in the eyes, and in the upper branches of the fifth nerve, with nausea, vomiting, and insomnia." He has had no diplopia, but in recent years he has been "unable to read; the print becomes blurred, the letters have colored borders." "Riding on the train always gives me pain in the eyes and headache." Many oculists have prescribed glasses, and from one pair in 1892 he got a short term of relief. In 1904 two laryngologists operated upon the nose, "removing some bone," and after the second operation there was relief for a little while.

In 1902 a leading surgeon in one of the most famous of American medical colleges "advised clipping the upper branches of the left fifth nerve." This was done by another professor of surgery in another medical school. There was relief of pain upon this side, but none in the right eye and right side of the head, and the general symptoms persisted. This first operation was therefore followed by resection of the remaining infraorbital and supraorbital branches on both sides. The nerves were drawn out as far as could be and cut or broken off to the greatest extent possible. Complete ptosis of the right eye immediately followed, also some paralysis of the lips.

For two weeks he "did nicely", but then he began to sneeze persistently, and an inflammation of the antrum of Highmore ensued. "The pain from this is not to be described." A laryngologist was now consulted who used adrenalin locally and fitted glasses. Since then the patient has alternated between pain more intense, and suffering less intense. When the antrum could be drained there was comparative relief.

Thinking that his long and violent "neuralgia" might have been due to some dental affection, the patient has had every tooth in both jaws extracted, without the least relief.

In order to complete the history of this case, one detail may be mentioned: The patient states that he has at all times had an exceptional sexual desire, and that this has been most irresistible when the neuralgia was worst. He has for years believed that in his case at least a sort of "erotomania" was induced by the cause of his suffering.

Since 1892, Dr. H. has "scarcely been free a day from 'neuralgia' in some part of the head, neck, or body." In the last two years the pains have been less localized, "more general". Driven almost mad by his sufferings, he has subjected himself to heroic treatments with almost all sorts of drugs, particularly phenacetin and similar preparations supposed to allay pain. He has repeatedly bled himself until he fainted from the loss of blood. He assures me that if he had not been restrained by the thought of his duty to his wife and children he would long ago have committed suicide. He would rather die now than to endure another five years of agony as atrocious as the last five. He loves his professional work, but now has an assistant to accompany him in all his calls. He has conquered all the lapses into habits of drink, addiction to opium, cocain, chloral, etc.; of this there is no doubt whatever. He is now superintendent of a Sunday school, etc., loved and trusted by his fellow citizens.

The man presents a most pathetic spectacle. Huge wounds and cicatrices are visible on both cheeks and above the eyebrows. The right eyelid is so contracted and tightly closed down over the globe, that it is not possible even for another to raise it except to produce a slight interpalpebral slit. By throwing the head back and with exertion he can catch a glimpse of objects with this eye. I succeeded in demonstrating that this eye has almost perfect acuteness of vision. It is an eye hopelessly buried by a surgically paralyzed lid. No one would attempt to relieve this ptosis by an operation, even if the patient would allow it. He has permitted the last operation, no matter what the future may have in store for him, and says he "would give years of his life if he had never been operated upon at all." His cheeks and lips are sunken from the loss of his teeth, and his speech is thick and indistinct. He has antral disease, also the result of the operations, and it is impossible to see what may be the outcome of this.

I cannot learn what were the orders in all of the prescriptions of the six or more oculists who have examined his eyes. He came to me wearing:

R.+Cyl. 1.00 ax. 90°.
L.+Cyl. 1.25 ax. 90°.

These had been worn since last September. He also had a prescription from an oculist given a few days before his visit to me, but this had not been filled. It read:

R.+Cyl. 0.50 ax. 75°.
L.+Cyl. 1.00 ax. 105°.

Under cycloplegia I found the following error:

R.—Sph. 0.25+Cyl. 0.37 ax. 90°.
L.—Sph. 0.25+Cyl. 1.37 ax. 90°.

This was ordered, full strength for distance. I also found subnormal accommodation, and this was twice as great in the right eye as in the left The man is 38 years old. I also ordered for reading and writing:

R.+Sph. 1.50+Cyl. 0.50 ax. 90°.
L.+Sph. 1.50+Cyl. 1.37 ax. 90°.

This, unfortunately, could not be incorporated with the distance correction, as bifocals, because of the fact that the head must be thrown back in order to catch the sight of distant objects with the right eye. The presbyopic segment would therefore interfere with distant vision, and we both wished to preserve the function of this eye for possible future contingencies. Two pairs of spectacles were therefore ordered. With my correction there was the best acuteness of vision in each eye, fusion was perfect, etc.

So far, therefore, as concerns the refraction of the three oculists whose records I have, it is painfully evident that if one is correct, the other two are hopelessly inaccurate. If one can give relief, neither of the others could do so, and probably would increase the morbid reflexes. The presence of subnormal accommodation had not been suspected by previous refractionists.

Now what was the matter with this man? What was the primary and fundamental disease which began in childhood, never ceased, and which increased until, during the last 14 years of his life, few men have endured more excruciating suffering? I have never heard a more evidently true and startling record of continuous and heroically endured pain. There is something truly magnificent in the fact that morally and mentally this man has not only not committed suicide or gone to the bad by drink, or drugs, but has risen above it all, and has lived. And not only has his disease not killed him, but he has also lived through all that chirurgicomania could do for him. Disease, drugs, and surgery, these three; but the worst of these was surgery.

When this boy began suffering with what for thousands of years has been called "migraine", a Philadelphia oculist had learned, and a Philadelphia neurologist had emphasized the truth, that migrainous and neuralgic disorders were sometimes due to eyestrain. The boy's family physician ignored what Thomson and Mitchell published on the subject. Eight years later, in 1882, the boy was still suffering while Dr. G. C. Savage was publishing his great discovery that all sick-headache is due to eyestrain. The youth's physicians never spoke of the fact. In 1883 the young man was still enduring frontal headache, nausea, pain in his eyes, etc., and Dr. Lauder Brunton had written and published these words:

> "But frontal headache is not the only one which may arise from abnormal conditions of the eyes, for megrim or sick-headache is very frequently associated with, and probably dependent on, inequality of the eyes, either in the way of astigmatism, myopia, or hypermetropia."

Still the young man's physicians disbelieved, were ignorant, or were silent. Even in 1885, 1886, 1887, and 1888, neither the medical student, nor his physicians, nor his professors, had learned what Thomson, and Savage, and Brunton, and Hewetson, and Ranney, and Stevens, and Martin, had said was often the cause of such afflictions as the medical student endured. For 14 years more, worse and worse grew the young physician's sufferings, and while they grew worse, many other clinicians were contending that such sick-headaches and "neuralgias" were due to eyestrain. They were not listened to. Nor had the laryngologists yet heard about the authoritatively reported connection of eyestrain with migraine and neuralgia, and they "took bones out of his nose" without giving their colleague any relief. But they did no harm.

By this time writers had multiplied who emphasized the now 25-year-old theory of the origin of migraine, sick-headache, or neuralgia in ametropia, but the professors of surgery disbelieved, were ignorant of, or were silent about the matter. So they cut in, pulled out, and twisted off, four healthy nerve-trunks of the face. These nerves were the most innocent of servants, performing their normal function of transmitting impulses of warning that some physiologic function had gone wrong. The messengers, like the "Bringer of Bad News" of the picture, were struck dead, and with their undoing there was paralysis of the muscles of one eyelid, causing one eye to be thrown out of use forever,* the production of antral disease, and possibly of worse things yet.

And still professional leaders (who do not lead), the great surgeons, neurologists, diagnosticians, gastrologists, and even the great ophthalmologists, are either silent; cynical; or ignorant as to the eyestrain origin of "migraine".

Our colleague's disease was a bad case of eyestrain. He was badly treated by ten or fifteen of his fellow-workmen. It is not a pleasant professional picture, and the painter of the picture will doubtless be roundly abused, but the picture has its place in the gallery of the exhibition.

I do not expect perfect relief will now come to Dr. H. from the proper correction of his eyestrain but with such splendid fighting qualities, moral, mental, and physical, as has been illustrated, one does not know what may happen and the only rule is *nil desperandum*. The following are some extracts from letters I have received from him:

"Since I saw you my eyes are more quiet and restful. I read some on the train coming home, and was without headache, although I was on the train for ten hours at one time. The eyes are not so irritable. I can read longer than before. I am expecting great relief although I am afraid to say so." March, 1906.

"I feel greatly encouraged. The antrum trouble is better. I think I shall be better when the weather clears up." March, 1906.

"I have read more and with more satisfaction during the last month than I have done for years. When at home I read every evening until bed-time. Before seeing you I went to bed at dark, or as soon as I could. I have had no bad attacks of pain. Two nights ago I was up all night and busy the next day, and read until bed-time, and there was no headache—a new fact in my life. Yesterday I was thinking I should have neuralgia, and would have to go to bed before night; my eyes were irritable; and "restless" for an hour or two, but then all came right. I read an hour or more last night and still had no bad pain. I am now in the habit of reading awhile, then put the book down, glance about for awhile, and then return to reading. My wife says I do not "grunt" and complain as much, read much more; I am not so "irritable", and I sleep well. I have lost no time in my practice which has been heavy of late. I have taken no drugs—not a "pain reliever" since I saw you. As you know, I have from youth had abnormal sexual desire; it has not been uncontrollable, but it has been a hateful thing. I have always believed it to be reflex in character. I have taken in the past from 100 to 200 grains of bromids a day, and other drugs, but without relief. Since I saw you I have been the nearest normal I have ever been in this respect—indeed I think I am wholly normal. The irritable condition of the eyes has almost but not quite gone. I am afraid to say I am well; I do not feel entirely so, but I am more encouraged than ever. To sum up, I am in the best condition I have been in for seven years; I am nearly well, but am afraid to think so. I have a poor way, perhaps of expressing myself, but you have helped and encouraged me. Grateful is not the word, etc." April 4, 1906.

A CASE OF RENAL CALCULUS WITH MAGGOTS WITHIN THE STONE: A CASE OF CYSTIC KIDNEY WITH OBLITERATED URETER ASSOCIATED WITH A FIBROID UTERUS CAUSING A CHRONIC DISTENTION OF THE BLADDER WITH RETENTION OF URINE.

BY
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In the two following cases operation was done during my last service at the Pennsylvania Hospital, and they are sufficiently unique, especially the first case, to deserve record.

Case 1. D. B., an Italian laborer, aged 33, was admitted to the Medical Wards of the Pennsylvania Hospital on July 21, 1905, and was transferred to the Surgical Wards on July 24. At this time he presented all the symptoms of a well marked pyonephrosis of the left kidney. He first had an attack of pain in the left lumbar region in March, 1905. It was followed by attacks of frequent and painful micturition. He was able to continue at work until two weeks before his admission. At the time of his transference to the Surgical Wards he was passing large quantities of pus in the urine and complained of a great deal of pain in the left kidney region. There was marked tenderness over the left kidney. On July 28, Dr. Charles F. Mitchell made a cystoscopic examination under ethylchlorid-ether anesthesia but without any definite result. When I first saw the patient on August 1, he was not markedly septic but the quantity of pus, the pain and tenderness were about the same. On August 3, I exposed the kidney through a lumbar incision. It was very adherent and enlarged, and palpation showed a hard mass occupying the lower half of the organ. The kidney structure over the mass was divided and a very large stone with projections into the calices was removed in two portions. A large quantity of very foul pus escaped during the manipulations. A drainage tube, together with gauze drainage, was introduced and the wound partially closed. The stone removed was examined the same day in the pathologic laboratory and the following report was made:—

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* One of the unsuspected evil results of this ptosis of the right eye, and not one of the least, is the revolution in cerebral mechanisms, and in the habits of eye, hand, and body, by suddenly turning this adult into a left-eyed person. This affliction will never be wholly overcome.

"The specimen consists of two nephroliths which together weigh 17.5 grams. The larger portion of the stone is ovoid, measuring 2x 2½ cm. in diameter. The surface is irregular and is covered with more or less dried blood. On cracking the stone it is found to have a hard center while the cortex is softer and more friable. On microchemic examination the stone is found to have mixed contents; the crushed part is uric acid with a small amount of calcium oxalate: the outer part contains much phosphate with some oxalate and some uric acid. Extending through the stone and opening out to the surface, there are many small passages, some as large as 1 mm. in diameter. These were found full of the larvæ of *Musca domestica*, which were also found crawling over the surface of the stone

"The second portion of the stone is 1x1½ cm. in diameter and shows a pronged formation at one end corresponding apparently to the form of the pelvis of the kidney. Its cortex and centrum is similar to that of the other portion of the stone, with the exception that it is solid throughout."

The maggots which I saw the next day were about one-third the size of the ordinary maggot and could still be seen crawling over the fragments of the stone and in and out of the smooth channels extending into the stone. A number of these maggots were sent, with a portion of the stone, to Dr. Ch. Wardell Stiles, of Washington, who reported that they were the ordinary domestic maggots.

On the fourth day after the operation the dressings containing the pus from the wound were carefully wrapped in a sterile piece of gauze, surrounded with wax paper, and the following morning there were a large number of full-grown maggots present in the gauze. At none of the subsequent dressings were maggots found.

The patient slowly improved after his operation but the amount of pus discharged from the wound was quite profuse. On August 16, his temperature was practically normal and he was doing well. In the latter part of September and the early part of October the drainage from the wound was not so free and the patient had several chills with rises of temperature, due to retained pus. Better drainage was established and he was able to go about the wards and lend considerable help in the ward work. The sinus, however, did not close, and the patient still had some pus in the urine. On November 24, the patient being in good condition but the sinus showing no disposition to heal, or the amount of pus to decrease, I determined to remove the kidney and the patient consenting I operated the next day.

Owing to adhesions, the nephrectomy was somewhat difficult but the whole kidney, containing two small fragments of stone and considerable foul pus, was removed. Because of the adhesions I could not ligate the ureter and vessels and therefore cut the kidney away after placing a clamp on these structures. After the removal of the kidney the vessels were ligated with gut, and the clamp removed and a gauze drain inserted. The patient made a prompt convalescence after this operation and at the present time his wound is entirely closed and he is perfectly well.

In questioning this man carefully through an interpreter, I found that some years ago, in Italy, he had a cystitis and was treated by irrigation. Last April he had what he supposed to be a recurrence of this trouble and purchasing a catheter proceeded to irrigate his own bladder.

This he did repeatedly but without any great relief. He states that he was careful to cleanse the catheter and keep it in a clean towel, and he cannot recollect ever having seen flies on the catheter at any time. As the patient had never at any time had an operation done upon the bladder or kidney, excepting the cystoscopic examination conducted in the hospital, there is probably no other explanation of the presence of the maggots within the kidney stone excepting that the eggs were deposited upon the catheter used by the patient and in this way found an entrance into the urinary tract.

I have made some search of the literature on this subject and have interrogated a number of pathologists and surgeons, but have been unable to find a similar case.

Case 2. Widow, aged 43, was admitted to the Pennsylvania Hospital November 17, 1905. She had never had children; menstruation had always been regular. Eight months ago she began to suffer from indigestion and a sense of fullness in the lower abdomen. Three weeks ago she had great abdominal pain and great difficulty in urinating. Later defecation also became difficult. The patient came to the hospital because of the marked vesical and rectal tenesmus. An examination of the abdomen showed a large tumor extending above the pubes. Vaginal examination indicated a connection between this tumor and two others, one of which could be felt in the anterior portion of the uterus, pressing against the bladder, and the other in the posterior portion pressing against the rectum. A rectal examination showed that the tumor posteriorly nearly completely obstructed the rectum. The patient was a very stout woman with a thick abdominal wall. A diagnosis of fibroid uterus with partial obstruction of the rectum and vesical irritation from pressure, was made. The patient was operated upon on November 21, under chlorid of ethyl-ether anesthesia. A median incision was made and when the peritoneum was reached it was found to be adherent over the tumor mass, which could be felt above the pubes. The peritoneum was therefore divided higher up in the wound and it was then discovered that the tumor was an enormously distended bladder with very thick walls. One hour before the operation a nurse had catheterized the patient and withdrawn about 26 ounces of urine. The patient said that this catheterization gave her most intense pain. The catheter was introduced on the operating table and 20 ounces of urine were withdrawn. The bladder did not contract as the urine escaped but simply collapsed in thick folds; the wall of the bladder felt as though it were half an inch thick. A careful examination of the ureters was made but each seemed normal. The hand was passed up to the left kidney which was found to be enormously distended with fluid. The right kidney was normal in size. The uterus was as large as two fists and contained a number of fibroid tumors, one of which was low down in the cervix producing great pressure on the lower portion of the bladder, and another was tightly wedged down in the culdesac making pressure upon the rectum. I determined first to remove the uterus and then consider the condition of the kidney. A supravaginal amputation of the uterus was done, both uterine vessels being exposed before they were ligated. It was necessary to dissect the bladder off from the anterior tumor. The patient stood this portion of the operation very well, and lost very little blood. I therefore determined to remove the left kidney at once. It was exposed through an L-shaped lumbar incision, the transverse portion extending along the crest of the ilium. There was no difficulty in exposing the kidney but its separation from the surrounding tissues was difficult. This difficulty was not so much due to adhesions as to the great size of the kidney, which extended far up under the ribs and well down below the crest of the ilium: it was the largest kidney I had ever seen removed excepting one the seat of a sarcoma. It was filled with fluid and I was convinced from its size that it was functionless. In separating the upper pole the sac was ruptured and a quantity of odorless grayish fluid escaped. Even after the kidney had collapsed it was removed with great difficulty. Finally, however, it was brought out on the back and its pedicle ligated. It was impossible to distinguish the ureter definitely. A gauze drain was introduced at the lower angle of the wound, the rest of which was closed. On examination of the specimen after its removal it was impossible to locate the ureter. A more careful examination was made later in the laboratory by Dr. Longcope but he too was unable to find the ureter. The kidney was 25 cm. long and 15 cm. wide; the pelvis was 15 cm. in diameter; and the wall varied from 1 to 4 mm. in thickness and contained no kidney substance.

This patient's convalescence was uninterrupted. She passed a normal amount of urine at once after the operation. She was discharged from the hospital on January 17, 1906, but might easily have gone home much earlier.

This case presents two interesting points. First, the distention and hypertrophy of the bladder, which exactly corresponded to that seen so often in the male from an enlarged prostate gland. The patient's residual urine must have been somewhere between 20 and 26 ounces. Even with the catheter the nurse was unable to empty the bladder completely. After the operation urination was perfectly normal. The other interesting feature of the case is the cause of the cystic kidney. There was certainly no dilation of the left ureter, as I palpated it carefully before doing the hysterectomy. In view of the presence of the ureter as high up as where it crossed the iliac vessels, I am inclined to think that the cause of the condition was an obliteration of the ureter rather than a congenital malformation.

NEPHRECTOMY FOLLOWED BY PREGNANCY AND LABOR.[1]

BY.
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Pregnancy and labor subsequent to nephrectomy is of such infrequent occurrence that it is of interest to record each case coming under observation. Bovée[1], of Washington, reports that but three cases are to be found in the literature.

CASE 1. A nephrectomy in 1888 by Konig, for tuberculosis in a patient aged 18, was reported by Steinheil. In 1895 she returned, being then two months' pregnant, with a large amount of pus and some blood in the urine. The patient was safely delivered at full term, the pregnancy having practically produced no effect upon the condition of the kidney. She died of tuberculosis of the other kidney in the winter of 1897, more than one year and nine months after her delivery.

CASE 2. Schramm reported a case in which a kidney was removed for hydronephrosis, on April 1, 1891, the patient being 25 years of age. She returned four years later, being then five months' pregnant. The urine was abundant, with a slight amount of pus. She was delivered July 31, 1895, after a normal labor. Convalescence was normal.

CASE 3. A nephrectomy performed on March 18, 1901, for pyonephrosis was reported by Bovée. The patient was delivered April 15, 1902, after a normal labor. Nothing of importance occurred during her convalescence, but albumin was present in the urine, and continued to be present at the time of the report.

Baldwin[2], of Columbus, adds two additional cases.

CASE 4. Nephrectomy performed by Baldwin September 27, 1898. The patient was single, aged 26. She had had pain in the right side for four years. Family history of pulmonary tuberculosis. The right kidney was greatly enlarged and quite tender. The urine was normal in amount and contained no pus. Operation disclosed a hydronephrosis, with the ureter reduced to a mere fibrous cord. There was no evidence of tuberculosis of the kidney. The patient afterward married, and was delivered after a normal pregnancy August 14, 1901. Puerperium normal. She died of typhoid fever May 20, 1902.

CASE 5. Nephrectomy performed by Baldwin March 8, 1900. Patient was married, II-para., last labor nine years before operation. It was followed by infection and pyelitis. Subsequent history of periodic enlargement of the kidney. Of late this tumor is large enough to extend beyond the median line, the attacks are accompanied by chills, fever and vomiting, and followed by a free discharge of pus from the bladder. Nephrectomy by abdominal section. The patient made a good recovery. She soon became pregnant, and was delivered September 7, 1901. Fifteen months later her health was excellent.

Fritsch[3], reports two cases of pregnancy following nephrectomy:

CASE 6. Nephrectomy was done in the Spiegelberg Klinik in 1881, because of ureteral fistula. The patient subsequently became pregnant, and had a normal pregnancy until the sixth month, when she had an abortion produced. From this she made a good recovery.

CASE 7. Nephrectomy was done because of ureteral fistula following ovariotomy. The patient subsequently became pregnant and had a normal pregnancy and labor without complications.

Fritsch also refers to a case published by Schramm[4].

CASE 8. Pregnancy followed nephrectomy, with a normal course and with normal labor, the patient making a good recovery.

Bovée overlooked a case of mine reported in 1899[5]. The following is an account of the case as heretofore published.

Mrs. B., aged 34, has had 4 children and 7 miscarriages. She has had good general health until the present illness. The family history is good. No member of the family has died of pulmonary tuberculosis, but one sister has had tuberculous bone disease. She stated that her health had been running down for three years, during which time a swelling had formed in the left side of the abdomen, and had progressively increased in size. She had been confined to her bed or room for several months. Examination revealed a very anemic and somewhat emaciated woman. The left side of the abdomen contained a tumor extending from the ribs to the pelvis, and posteriorly in the lumbar region there was a swelling—evidently an abscess pointing near the spine. The heart and lungs were normal. She was admitted to the Kensington Hospital for Women, August 12, 1895, with a diagnosis of tuberculous abscess of the kidney, with a perinephritic abscess pointing in the lumbar region. This was opened and drained, and the patient was discharged September 17. She was put upon tonic treatment, and reentered the Hospital October 1, 1895, when her general condition had somewhat improved. Both ureters were catheterized with the following result: No urine was obtained from the left ureter; from the right ureter three drams of urine were obtained in 30 minutes, which contained a marked trace of albumin, but no blood cells or casts. The urine obtained from the bladder was acid, with a specific gravity of 1012. It contained a trace of albumin, but no casts, and also a small amount of pus. The urinary examination indicated that the right kidney was doing all the work. October 17, nephrectomy was performed by abdominal section through a T-shaped incision. The long incision was made in the semilunar line, and the transverse incision was made from the semilunar line to the lumbar muscles. The large suppurating tuberculous kidney was removed, together with the upper part of the ureter. The abdominal wound, and also the tuberculous sinus, were drained with gauze. The patient was discharged November 2, 1895. The subsequent history of the patient has been most satisfactory. On February 26, 1897, she had gained 41 pounds. On February 15, 1898, she was quite well, the sinus having been closed almost a year. In 1898 she gave birth to a living child, and at last reports both mother and child were well.

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[1] Read before the Philadelphia Obstetrical Society, January 4, 1906.

Under date of December 4, 1905, the patient's husband writes me that the child born in 1898 is alive and well. In August, 1900, Mrs. B., was delivered of a dead infant. At the present time she is enjoying excellent health.

I last saw Mrs. B., October 10, 1899. At that time she was feeling well, her only complaint being backache; also for some time she had noticed a swelling in the right side of the abdomen. Examination showed a very movable right kidney. Examination of the urine showed nothing abnormal except hyaline casts.

Ten labors following nephrectomy is too small a number for generalizations, but as each of the labors was normal, so far as the evidence goes it indicates that pregnancy following nephrectomy is not especially dangerous.

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TIMIDITY.[1]

BY
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[*Concluded from page* 28.]

Let us look now into the cases under discussion and see what ground we have for thinking that they desire to flee at the approach of the strange, unaccustomed, or disagreeable; that they actually exhibit traces of running away, together with the stress of inhibition, and the train of associated mental and physical activities. I have condensed the answers to the question "If you are timid only upon certain occasions, what are those occasions? Describe the feeling." Show how largely the fear of the strange or unaccustomed plays a part" and omitted repetitions as far as possible.

Man, aged 54. When I do not know what is to confront me and when I feel that I am not thoroughly prepared for all contingencies that may arise.

Woman, aged 24.—When I am doing something that I am not sure I can do well.

Woman, aged 28.—When I am in the presence of a small number of people who affect me as being my equals or superiors; particularly if something—however slight, such as taking a small part in the conversation—is expected of me.

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[1] Read before the Cincinnati Medical Research Society, Dec. 21, 1905.

Man, aged 25.—When entering a room full of strangers. It removes the joy of existence and makes me wish to be absent.

Woman, aged 25.—The most usual occasion is one in which I feel myself cornered for the express purpose of mental dissection. I feel embarassed when I feel myself lacking in some particular; unusual sensitiveness to the fact that I am being critically examined.

Man, aged 38.—In the presence of superiors, when I am expected to act. A shrinking from the prominence my act would give me.

Woman, aged 29.—Public speaking. Socially, became self-conscious, introspective; think of dress, position of body—mind becomes acute to physical conditions.

Man, aged 28.—Am most likely to be thus affected, when I know that the attention of people, especially strangers, is directed to me, or when engaged in something that I am not accustomed to.

Woman, aged 24.—It is an intense, painful self-consciousness, usually caused by the belief that some one else is criticising me unfavorably or misunderstanding me hopelessly. In the presence of another person I tend to view myself with that person's eyes.

Man, aged 30.—Whenever I have anything to do in public or something in which I feel that much depends. Strong inclinations to go the other way, to put it off, or do nothing, and let events take their course.

Girl, aged 19.—When self-assertion is required.

Woman, aged 35.—When in the presence of certain persons not well-known or a great many people. Sometimes with those whose estimation I desire. A shrinking from having many eyes turned upon me and a dread of speaking.

Woman, aged 21.—Preeminently social gatherings; when I am among people whom I have never met before. whose interests I do not know, and who do not care to know mine and conversation is the only pastime offered. When standing with a single person in the middle of a reception room, after the time when you should have shifted that person off to another and conversation begins to lag. First, a ransacking of all the pigeon-holes of my mind with the doleful result that I find nothing there that seems fiittng for this particular time and place. A consequent uneasiness of mind and body. A desire, a strong desire to withdraw and to go to some place where I will be all alone.

Man, aged 27.—Fear ridicule especially. Cannot endure making a mistake in public. Always timid, if conscious of another's scrutiny.

Man, aged 25.—Always before some anticipated event upon the outcome of which my interests or the interests which I fear are at stake.

Woman, aged 40.—A dread of initiative. A desire to avoid notice. Self-distrust.

Woman, aged 28.—Sometimes when speaking before a number of people, especially when a number in the audience are as well or better informed than myself.

Girl, aged 18.—In the presence of people I most admire or I feel despise me.

Man, aged 27.—When undertaking anything new and important.

Man, aged 31.—(a.) Previous to meeting certain people, the timidity being caused by uncertainty as to how I shall be received. (b.) Timidity of giving expression to opinion before others, lest they be received unfavorably or criticised. (c.) Feeling of timidity from no one especial influence, but resulting from nervousness and exhausted brain, a feeling as though I were unable to cope with the exigencies of life. (d.) Arising suddenly and revealing incoordination of faculties.

The following case was one of pronounced timidity:—The man had a splendid physique, distinguished appearance and fine mind; but was the dirtiest individual I ever saw in a higher institution of learning, and exceedingly timid. I feel convinced that a strong course of hydrotherapy long continued, together with the assistance of a competent tailor would have greatly relieved his distressing bashfulness. He wrote:

"On such occasions I find myself, say, going into a large, lighted well-filled room, biting my lower lip; walking slower or faster than usual (gradually faster, I am told, at first, then I slow up), looking upon the floor, carrying my hands in unusual positions and scraping my left thumb against my forefinger. I feel my face getting hot, brace up, and generally continue to make myself look most idiotic; feel that others are looking on and enjoying my discomfiture. Beginning to speak before a large audiance is another occasion. At first, I never seem to realize that I am in such a place, until I find myself actually speaking. I am made aware by hearing my own voice, which sounds far off, indistinct and altogether strange. I see by some people's uneasiness that I must be embarrassed, so I resolve to cool down. After some time, I get wrapped in my thought, then wake up, and think what idiots they are who are listening to me. This is the beginning of control. From then on, I am generally master of myself."

Dr. Harry Campbell, in his article on Morbid Shyness, says "Morbid shyness not infrequently occurs in men of fine physique and of great animal courage. One sufferer of my acquaintance took great pleasure in riding and breaking in the worst-tempered and most unruly horses, and yet rather than face an acquaintance in a country lane, would break through a hedge, if there were no other means of avoiding him. This man's father, I may mention, was so morbidly shy, that sooner than face the ordinary visits of callers on his wife's 'At home' day, he would go to bed in the afternoon!"

It is difficult in a particular psychosis to draw a sharp line between etiology and manifestations, or in medical terms, symptoms; for the manifestations or signs which we see, often seem to be the result of the feeling; and the feeling is then loosely called the cause, when, in fact, it is only a psychic correlate. On the other hand, an exhibition of feeling often intensifies the feeling, and this yielding to an expression of emotion seems to form a large part of the cause of the feeling. William James says, "Common sense says, we lose our fortune, are sorry and weep; we meet a bear, are frightened and run; we are insulted by a rival, are angry and strike . . . . . the more rational statement is that we feel sorry because we cry, angry because we strike, afraid because we tremble."

There is a primal cause, or cause of origin; an ultimate cause, or cause of purpose. A mere statement, definition, or description often suffices for a reason. It is quite excusable, therefore, that there should exist a confusion of cause, symptoms, and description in the foregoing answers.

Another question relating to symptoms was "When embarassed, how do you act?" Instead of going over the answers separately, I will deal with them collectively. I was surprised at the ease with which I could arrange them all under the heads of (1.) movements, feelings, or thoughts, preliminary to running; (2.) those manifestations which are pure survivals of the running itself; (3.) those due to the stress of inhibition and expressed by physical and mental conditions, together with accessory nervous movements. First comes the intense desire to be elsewhere; the tendency to alter the present position; to become absolutely inconspicuous in the present situation; to efface one's self as fully as possible. Then after the desire, follows a nervous trepidation; a tenseness of muscle; a glancing wildly about; a desire to bury the face and a turning away of the head. And when, figuratively speaking, the pursued and tormented subject is fairly on the run, there is copious perspiration, principally of the face and hands; flushing and blushing; a tight feeling about the throat and heart; difficulty in getting the breath and irregular respiration. There is throbbing and irregular heart-action; a feeling that someone is close upon you; disordered speech; inability to think quickly; stammering, stuttering, forgetting words; a feeling of being tongue-tied and the tongue getting twisted. A conversation is not usually attempted in the act of running, but if it were, as is demanded by the paradoxic situation of the timid individual, there is no doubt that a confusion of ideas and resulting disorders of speech would follow. The sufferer feels that he is doing poorly and may break down; as if something inside him fell and the throat were filling up; as if something were rising up inside and choking him; as if the stomach had fainted.

But the strain of inhibition adds more symptoms. The mental excitement is intensified and the somatic results are almost endless. There is a feeling of helplessness, weakness, of inadequacy for the emergency; a great consciousness of an unsatisfactory self, of uncertainty, uneasiness. Some become stiff, silent, reserved in manner, and seem to be at a standstill. Said one individual, "I have a general feeling of lassitude and deadening of the faculties and feelings, a 'don't care' mood; such as I imagine a hedgehog might feel, when he rolls himself up and simply waits for the thing to be over." Others are excitable, restless, and feverish. There may be faintness and pallor; trembling of the whole body, or merely of the lips; cold hands and feet; feeling of legs being shaky or paralyzed; disturbance of the intestines. A very self-contained young woman of 28 said.

"I usually manage to preserve a pretty calm exterior, though internally I have gone to pieces. People have often spoken of my coolness, when really I have been very nervous. I sometimes blush, perspire freely on my hands, have cold hands, my heart beats wildly, and I forget words, but usually supply other words, so that the defect is not apparent." Another young woman of very much the same disposition and aged 24, said "I blush sometimes, frequently forget words and familiar parts. I am likely to be awkward—lose simple motor coordinations. In eating, I am likely to drop something, or stick my teeth with my fork in putting things into my mouth. I often use words wrongly. I think my face shows embarassment, but I cannot tell just how. My lips tremble. I want to get away from the people who have caused the embarassment."

The voice grows artificial and affected. The face twitches. In trying to find relief for this torture of body and mind, numerous accessory nervous activities come into play. They laugh, smile, or talk more than usual. Some frown and look serious. Excessive gesturing is used. They tell of biting the lower lip; scraping the thumb against the fore-finger; restlessness and awkwardness of hands and feet; rubbing the hands or fingers together; bringing the hands together either in front or behind; getting the hands and feet out of sight; putting the hands on the arms of a chair; leaning hard against the back of a chair. One man stands on his left leg with his right arm moving. Others place the hand on the back of the head; scratch the head or face; put their hands in their trouser pockets; cross their legs or feet. They tell of twitching the shoulder; biting, picking, snapping, or observing the nails; snapping the fingers; tapping the foot. One man feels much more at ease, if he can hang over the back of a chair. Another puts his hand over his head and holds on to the back of the chair, so that persons shall not see him tremble. Some cough as if to clear their throat. There is writing on paper when talking; twisting a ring; playing with some ornament; passing the hand over the forehead; beating the hand on a table; moving the head suddenly; stroking or twisting the hair; pulling the mustache; raising the eye-glasses.

The foregoing list does not by any means exhaust the category; but it is a faithful account of what my subjects reported of their own exhibitions of timidity. I happen to know of many other little mannerisms of which they are unconscious. However, let them pass. Blushing is a symptom of timidity, with which most of my subjects are not troubled. It is not by any means a constant symptom nor does its appearance always indicate embarrassment; but the causes of blushing and timidity are very closely involved.

Dr. H. Campbell's study of "Morbid Blushing" in Wood's Medical and Surgical Monographs, Vol. VII, is another one of his little master-pieces. It is folly for me to take time for a discussion of this subject, when such a work may readily be referred to.

Timidity does not seem to hinder intellectual progress, so much as social and economic. It has a tendency to drive the subject into himself and gives him that exemption from social claims which allows time for purely analytic work. But where the force of active personality is needed, there he lacks.

Thirty-four of the subjects think, that on the whole, timidity hinders progress in life. Five think that it does not, and the others are not certain. Twenty-one think they would be happier, if not timid. Thirteen think they would not be. One says "Not happier, but more influential." The rest do not know.

The questions "Does timidity in any respect seem to be under your control? Have you found a way of lessening it. If so, what?" Refer to treatment. Many of the answers give rather, recourse to temporary relief, a means which is often indistinguishably blended with symptoms. Others show such graceful, studied, and effective methods, that they may justly be called means of treatmeat. I quote from the representative answers.

Woman.—Holding of the form more erect and drawing in of the lips as a means of gaining courage.

Woman.—The way to overcome it is to forget my distrustful self and do something of a wholly external nature; *i.e.*, to put some one else at ease.

Man.—If I only can move some part of my body, I almost immediately recover. Do something. Make some movement.

Woman.—Frequently I deepen my inspiration in order to overcome the feeling of embarrassment.

Man.—By the knowledge gained through experience and observation that the majority of people are as timid as myself and that by simply restraining my own feelings, I gain an advantage.

Woman.—In trying to overcome timidity, I try to take a just and normal view of life and of my place in the world; to see that I am really of little importance and that people are not paying much attention to me, on the one hand, and to have self-confidence on the other, in other words, to value myself and not to undervalue myself. By seeing other people's faults and foibles as well as their good points and by studying my own, I grow more independent. By means of good health, increasingly normal views of life, applied philosophy, I have really, to a certain extent, conquered my timidity.

Man.—I no longer take other persons very seriously—I am not awed by dignity or position.

Woman.—If I rehearse beforehand in my mind the way I wish to act and exclude the way I fear I may act, I can to some extent affect my conduct in trying situations.

Man.—Embarrassment (except perhaps in strong physical cases) may be conquered by simply assuming self-confidence and ease.

Man.—By thinking of something aside from the occasion of it.

Woman.—By shifting my mental position from self to others—assuming the sympathetic.

Man.—Keeping busy, cultivating an interest in other people and things, trying to forget about myself, and when a thing is once done, leaving it to look after itself and going into something else.

Man.—Will power has much to do with it.

Woman.—Trusting to my own judgments, instead of relying on other people's.

Woman.—Only by interest in others.

Woman.—Forget myself by becoming absorbed in something else. Moving about helps it greatly.

Woman.—By forcing myself to talk.

Woman.—By reassuring myself of a tendency to underestimate my ability; or by meditating that it is no life and death matter, if I do make some little "break."

Man.—As a public speaker, I could best control embarassment by deep breathing and concentration on the opening sentences. The rest generally took care of itself.

Man—Thinking about something else.

Woman.—Bite my under lip, endeavor to control heart-beats; talking to someone.

Man.—Facing the situations that cause the feeling, with a determination that self-control shall be asserted. Placing myself in these positions, for the purpose of acquiring self-control.

The foregoing answers state some methods of temporary relief and means of shifting attention from self. The nature of the questions allowed no discussion of general treatment. The medical principle of classification was not thought of, when the questions were framed. The most fertile field—the preventive—has no mention. The parent, physician, and teacher work together here. A thorough medical examination for every child and the correction by medical or surgical means of any physical abnormality which he shows, is an absolutely necessary precaution for insuring his comfort. Especially should this be insisted on, if the child shows any variation from a healthful psychosis. The intelligence of the parents or guardian, is, of course, the measure of how slight a variation may be detected. Often the physician or teacher has the opportunity to discover what the parents are too ignorant or careless to see. Along with the medical inspection goes the strict observance of rules laid down by hygiene.

Just as important is the preventative treatment from a psychologic standpoint. From the very first awakening of the child into a consciousness of self, his interest in waking hours should be constantly and pleasantly occupied in things about him; so that his consciousness may never be compelled to take refuge exclusively in self. Absorption in self is the natural tendency, for there consciousness has its roots. A painfully timid child is an example of somebody's ignorance or neglect.

It seems hardly possible that a child with a splendid physical, mental, and moral start, lasting into the teens, would ever develop a distressing timidity. But once a foothold is gained, after the preventive period allows no more chances, the different forms of treatment, which intelligent sympathy must devise, are almost endless. I think that in most of my forty-five cases the subjects show the need of a larger world-experience, less time for introspection, and a compelling determination on their own part to be persons at all times, and never mere sensitive things.

In conclusion I would say that this study was begun without reference to medicine. It was attempted as a tiny contribution toward the understanding of human personality, the most intensely interesting problem within man's reach. But, since studying medicine, I see its value twofold.

The physician has his ideal of what the physical side should be. He industriously works for a free, vigorous, and useful interaction between the parts of the human organism. The psychologist puts the emphasis on the psychic side. His ideal is a free and coordinate interaction of the conscious elements, so that the psychosis may be clear of all obstructing, distracting, and destructive thoughts, feelings, and actions.

Timidity, when experienced in a pathologic degree, is an obstruction in consciousness. It shows that the psychic emunctories are not working properly. The laxative influence and tonic effects of a different mental, affective, or moral attitude are necessary. We are beginning to realize that the restriction of a natural expression of feeling as surely results in spiritual depression and derangement, as the blocking up of any outlet of the body results in serious disease.

No individual, not even the priest, novelist, or professional psychologist, has so great an opportunity to study the nature of man, as has the physician. But he must be skilled in something more than medical sleight of hand. If the value of an occasional subject like this, at least, as a side light, does not seem evident to a Society for Medical Research, then the fault lies in my presentation of it.

Cerebrospinal Meningitis.—A fresh outbreak is reported from several districts of Germany, notably Essen and Silesia. It is said to be spreading in Westphalia.

SPECIAL ARTICLES.

A SCHOOL OF TROPICAL MEDICINE FOR HONOLULU. WHY NOT?*

BY
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There are three things absolutely essential to the successful establishment and proper maintenance of a School of Tropical Medicine. *First*, capable and experienced teachers. *Second*, adequate clinical material. *Third*, students.

Physicians possessing the necessary knowledge and the rare faculty of imparting it to others, together with an abundance of material for daily demonstrations, are requisites which could not be brought to a place or a country where the conditions had not already made them permanently available. Like the climate, they must smack of the soil.

So far as students are concerned, their attendance in sufficient numbers would depend on the recognized necessity of the specific knowledge furnished by the school; upon its accessibility to populous centers, as well as upon social and climatic conditions. Institutions of this sort grow slowly like a doctor's practice, but, like the practice, they are sure to grow when the value of the work done becomes known through the help of those who have been benefited.

All other absolute needs of the school could be satisfied by enterprise, energy, and enough money.

In this paper, I will note particularly the unoccupied scientific field in Hawaii, having time only for mention and suggestion, trying to indicate the extreme practicability of placing our first American School of Tropical Medicine in Honolulu.

Let us see how far a thorough knowledge of tropical medicine is lacking in the general practitioner away from the tropics, and how rapidly this knowledge is becoming recognized as a necessary part of every physician's stock-in-trade.

Until very recent times a graduate of any medical school in England or the United States had no specific knowledge of any of the diseases called "tropical". He took up the subjects of leprosy, plague, cholera, and the rarer skin diseases, it is true, but in such a misty way that when he came to his first case, if he ever did, he was unable to render a correct diagnosis. The matter was covered by the only terms he could use under the circumstances—typhomalaria, uremia, syncope, heart failure, erythema multiforme, or what not.

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* Read (in unabridged form) before the Fourteenth Annual Meeting of the Hawaiian Territorial Medical Society, Honolulu.

Even to this day there are comparatively few practitioners in country places in temperate zones, who know leprosy when they see it; while beriberi, plague, amebic dysentery, and many other diseases would be clinically incomprehensible to them.

Since the Spanish-American war, however, with Cuba, Hawaii, and the Philippines, as it were, brought close to the mainland States, the diseases of these countries have received popular exploitation, and transportation of troops as well as increased tourist travel both ways, has made the faraway disease a real menace to the whole country.

Owing largely to this same war and, also, to other earlier causes in Europe, an impetus has been given to the study of tropical diseases, and, in England, much intelligent interest has been shown by the profession in all diseases that make warm countries their special home.

In 1899, through the enthusiasm and enterprise of a few medical men, the London School of Tropical Medicine was established under government aid. The second school was founded in Liverpool, because the business men of that city felt that it would be a good thing for medical science and for their town.

Nor has this enthusiasm and interest radiating from the usual minority, lost itself in waves of air. Physicians in the round of practice, or quietly in well equipped laboratories, have carried investigation to its logical end in various subjects heretofore little understood.

Since 1898 we have demonstrated how yellow fever is carried and may be prevented; by a thrilling object lesson we have converted Havana into as healthful a city as any out of the tropics. Malaria has been rediscovered and made controllable. The searchlight of clear science has been turned upon tropical anemia and dysentery; with a bound we have grappled with the hookworm, while bubonic plague has been traced to its propagandists. On the eve of the establishment at Molokai of a Federal Laboratory for the study of leprosy, the resident physician at the Leper Settlement,* has discovered the "intermediate host";—the carrier of leprosy, and demonstrated the presence of *Bacillus lepræ* in the mosquito. And so with a long list of diseases, the morbid phenomena of which were as mysterious to us as the Gods of Fate were to the ancient Greeks. Or indeed as the germs of syphilis and most of the exanthems are today.

At the opening of the London school the president said:

"I have said that there is much that is special in tropical medicine. Why should this be? The answer lies at the root of our future studies. To know the cardinal fact of what is special in tropical medicine, to apprehend their bearing, and to be able to give a rational explanation for them is the first, and a most important step in the science and practice of this department. The principle of pathology and of treatment are the same the world over. That is quite true; but it is equally true that the details of tropical pathology, of diagnosis, and treatment, and consequently the application of these principles to practice, differ widely from those obtained in temperate climates.

"It is with the science and practice of medicine as with the science and practice of agriculture; success or failure in the application of principles depends in great measure on knowledge of detail. It is the knowledge of detail, the special training and the special experience, plus a scientific apprehension of principles, that will enable the practitioner to deal successfully with tropical disease. A physician may be competent to deal with disease in England but sadly incompetent to deal with disease in Africa."

With a wide-awake faculty and means at its disposal, work would not have to be confined to Hawaii. Like the Liverpool and London institutions our own school could send out its members to study diseases abroad, and many of the diseases we would have occasion to investigate away from here are, On the Road to Mandalay.

Most of the available knowledge of the sleeping-sickness which we possess, has been supplied by members of the tropical schools in England, and through the commission sent out under the auspicies of the Royal Society. Dr. Ross and his associates under the name of "The Liverpool Malaria Expedition" made five trips to West Africa for the purpose of study, their expenses being paid by some Liverpool merchants and a Scotch philanthropist interested in science. Even a Scotchman will dig up the "siller" if you get him interested.

Even in out of the way places like Hawaii and the Philippines everything points to further observation and study in medical directions;

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*After investigations extending over the period of his incumbency as Resident Physician at Molokai Leper Settlement (some four years), Dr. W. J. Goodhue has found *Bacillus lepræ* in the mosquito and the bedbug. I will soon be able to furnish a full report of the discovery.

reports of work, of medical meetings like this; letters and contributions to the medical journals, unusual clinical cases revealing more accurate observations and careful analysis.

Perhaps, too, with men organized for scientific work in all the various branches of tropical medicine, we would grow less fearful of our own ability to reach far, to take up scientific responsibilities; to undertake what we know better how to do, or ought to know better how to do, than any one else.

"You must be struck with timidity out there", wrote a distinguished physician to me some time ago. "You certainly have the brains, the foundation knowledge, and the tremendous opportunity. If you haven't the technical training you can easily get it, and it is simply disgraceful that you have to advertise for a man to do this and that work you are prepared to do; that you want a Washington man to help you out in leprosy, a Philadelphia man to run your laboratory, a New York man to point your scientific noses to game so near it might bite you. To my mind all you need is a thorough shaking."

Without special incentive or united endeavor scientifically, we are inclined to float easily; to grow used to narrow limits, to think that our own brains are not capable of almost infinite convolutions; in fine, to let everybody else get ahead of us in everything but pettiness.

With no belief in any pseudoscience or the vulgarism called suggestopathy, we know that there is a great deal in suggestion; and I feel sure that a School of Tropical Medicine in Honolulu would be the necessary stimulus; it would give us all a thorough "shaking", and wake us up to the fact that we have right here not only clinical material, but the brains to use it to its highest and most practical end.

In this room we have men qualified to hold the highest positions that could be offered to them in any college; men who have done original work and who ought to be forced to do more; bacteriologists, microscopists, leprologists, surgeons, alienists, careful students, keen diagnosticians, young men of energy and with the latest knowledge supplied by the best schools, older men with current ideas and a rich experience gathered here and away from here.

I say that modesty of the sort we are charged with is no credit to us, but a positive detriment to ourselves, our people, and the profession we love.

Setting in motion the proper influences, we could add to the world's therapeutic resources, and perhaps, be able to modify "an erroneous opinion the world has regarding tropical lands", showing that books like Dr. Woodruff's on "The Effects of Tropical Light on White Men" are based on wrong theories, and that by improving the habits of our people by instructing them what to do; by eliminating certain preventable diseases, we might easily have a healthier country than any in the coldest zones. It would be the duty of a prosperous school to issue bulletins and a journal of tropical medicine like the English schools do, thus furthering the interests of the community while it advanced the cause of science. Instead of fearing that a discovery like that made by the Leper Settlement physician might hurt trade, we could show that the discovery of the carrier of leprosy eliminates the danger of contracting the disease here and in all countries where it resides, and makes it possible to avoid the disease as we do yellow fever and malaria.

A library which would inevitably accumulate, would have valuable material in its Board of Health reports containing the opinions of pioneers in the field here: Hillebrandt, Baldwin, Emerson and others. The publications of such a school as ours would be, must furnish needed information that could be used for local distribution. Studies like those encouraged by the London School regarding the diet, dress, habits and so forth, of residents of the tropics, would prove of incalculable benefit to our people.

After Sir Patrick Manson had delivered his lectures on tropical medicine before the students of the Cooper Medical College of San Francisco, the Merchants' Association of the same city asked him for an address with the substance of which you are probably familiar. But I wish to quote part of the address because it will not hurt you to hear it again, and because it relates to my subject and is the opinion of a great scientist:

"When an Englishman is sent into a tropical country he is paid a double salary. He expects a leave of absence for a year every four or five years. The Suez Canal changed the trend of commerce. A similar revolution is in prospect with the completion of the Panama Canal. When the Panama is cut you will probably find that it will introduce yellow fever into Asia. You will find that a yellow fever scare is worse than a bubonic plague scare. There is nothing so fatal to commerce as a quarantine. Quarantines should never exist. They have none in England. There is no question as to the necessity of a School of Tropical Medicine in the United States. I presume that the standard of medical education in this country is not much different from the standard in England, and I know that an ordinary physician there fresh from a medical school knows nothing of the diagnosis and treatment of tropical diseases. You will find the United States today well represented medically in the British and the American tropical dependencies. Very few young physicians are competent to take charge of bodies of men in tropical countries. It is too much to expect of a medical man without a special education.

"I should think that here the proper proceeding (towards organizing a school) would be for some wealthy man of the State or town to undertake the matter.

"The opportunity in San Francisco is unique. It is far better than that of London. There is a local Chinese colony here of about 10,000 I understand, which should be able to supply a large number of cases for teaching purposes. You have plenty of Japanese, Filipinos, Hawaiians and other tropical people, and you could draw upon them."

Of study in a hot climate (a typical climate which we do not have in Hawaii) Dr. Manson says:

"A great deal has been said about studying the diseases where they arise, but the tropics where the steaming heat knocks the energy out of the Europeans, and where you feel inclined to sleep every hour of the day and can't look down a microscope without a drop of sweat obscuring the eye-piece, is no place for study. The place to learn tropical medicine is in a cool place like this. Cities do not live on bread alone, and if San Francisco would establish a name and reputation for an undertaking so valuable to humanity it would be greatly to her advantage."

This is all true and more applicable to Honolulu than it is to San Francisco even. We have not only Japanese and Chinese in great numbers, but our own native population. There are comparatively few Japanese, Filipinos, and Hawaiians in San Francisco. Beside the people mentioned as residents here, we have the Portuguese, Porto Ricans, a scattering of Filipinos, South Sea Islanders, and negroes. There are hospitals and dispensaries, a general system of free treatment much better than that of the mainland, and a set of government medical men in charge of all outside districts. The climate, too, cannot be compared with that of India and most tropical lands, subject to great extremes and other meteorologic disadvantages. The climate of Hawaii is worth coming 2,000 miles to enjoy, and, in summer, it offers a cool retreat for the residents of our hot American cities. A physician who could get a course in tropical medicine and a taste of our delightful Hawaiian winter all for one tuition fee, would no doubt come this far to secure them.

In the announcement of the London school we find:

"The object of the school is not only to acquaint the student with the diseases of the tropics, not only to teach him how to treat the various ailments he may meet, but also to put him in the way of investigating tropical diseases, to have him observe, to record and to study scientifically the great tropical scourges."

In his paper entitled "The Fellow With the Microscope", our retiring president has said:

"Allow me to call your attention to the vast array of problems in our profession which yet remain unsolved. How much there is awaiting the patient toil, the highest acumen, the keenest insight of the original investigator. For centuries we have had to endure the taunt that medicine is not an exact science; but step by step, we are advancing to high ground, and upon very many subjects our knowledge is coordinated and verified by exact observation, careful experiment, and correct thinking—the true scientific method".

And in his address delivered several years ago at the opening of our society's first meeting, Dr. Russell said:

"In every scientific domain there is a number of important problems intimately connected with the peculiarities of this distant country; problems that can be solved only by the intelligent efforts of its own residents. The whole scientific world naturally looks to us for that work. The influx of settlers from all parts of the world raises important questions of acclimatization, racial amalgamation, fitness of the country for various races and nationalities. In this respect the Hawaiian Islands may be compared to a chemic retort into which most diverse and incongruous elements and compounds have been introduced. All these, we must acknowledge, are questions of utmost importance; questions with which our conscience, duty, dignity, and moral responsibility are very much involved."

In a lecture entitled "Scientific Research the Indispensable Basis of all Medical and Material Progress", Dr. G. B. Ferguson says that more research institutions are needed:

"I cannot but believe that this great need will soon be remedied, and that at the cost of a few battleships real universities of teaching and research will be established in every large town, and technical and research institutions in most of the small ones".

Speaking of applying practical knowledge, Dr. John B. Deaver writes:

"There is not, and never has been, a higher calling than that of a teacher, and a teacher of medicine is one of the highest in this calling."

Said Dr. Morris in a recent address:

"Now in the days of light with all our apparatus of books and journals and illustrations societies and congresses, what wonder is it then that when none of these helps was available medicine should have come virtually to a standstill."

Dr. Dodson, a teacher at Rush Medical College, has this to say regarding the real work of a physician:

"Outside the real duties of the physician in the care of his patients and the study of his cases, the largest opportunity for activity and usefulness lies along scientific lines. It would be idle indeed to attempt to catalog the innumerable problems of immediate and vital interest to medicine, which are pressing for study and solution. Keeping in touch with the methods and spirit of pure science, their impress will make you more exact and methodic in the daily work of your profession."

In writing of bacteriology and laboratory work, Dr. DaCosta said:

"Now such laboratories cannot exist in individual hands. It is incumbent therefore, for every community, large or small, to possess one for public use. An active municipal laboratory is of the highest necessity and liberal provision for a bacteriologic laboratory in city or town is the test of the enlightenment of the commonwealth."

Referring to the establishment of a School of Tropical Medicine in the United States, Dr. Gould in advance of most other writers on the subject, said editorially in *American Medicine:*

"An American school of tropical medicine would be the natural outcome of our acquirement or influence in tropical countries. The profession has before it a great opportunity which should be seized".

And, later, the Journal of the American Medical Association, says:

"The problems of tropical medicine are becoming of more importance each year with both the profession and the public. Tropical medicine cannot well be overlooked in any future program of the Association."

Early in 1903 the Jefferson Medical College founded a lectureship on tropical medicine, appointing Dr. Kieffer of Manila as teacher. During the same year the Washington Post-Graduate Medical School established a similar course, followed by the organization in Philadelphia of a "Society for the Study of Tropical Medicine and Surgery". Chicago came next, St. Louis, Ann Arbor, and, finally, San Francisco. Under date March 1903 Dr. Keen of New York proposed a "Section on Tropical Medicine" for the Association: "Not only is the profession in the subtropical portions of America interested in the subject most vitally, but our new possessions in Hawaii, the Philippines and Porto Rico, our very intimate affiliations with Cuba, and the very early establishment of the Panama Canal, with a large population of Americans in Central America, make it imperative that the Association should give attention to the subject." After a visit to the West Indies, Nicholas Senn writes what could well be said of Hawaii: "It is a great pity that the medical officers of the hospitals have neither the time nor the appliances for the scientific investigation of the many yet obscure tropical diseases they are called upon to treat. The material is simply enormous, and could be readily made available by our young graduates in medicine and by prospective health officers. These are the places to which the attention of our foremost medical schools should be directed. Some of the scholarships should be devoted to the study of tropical diseases in these colonies. I became so deeply impressed with the great opportunities that I determined to use all my influence to have Rush Medical College take an initiative step in this direction". Granted that the need for a school of this kind is recognized the world over; that Honolulu is one of the most favored and appropriate localities for its establishment—how are you going to go about it? Just simply by going about it with some of the unquenchable faith and zeal shown by other founders of institutions which do not bring actual cash into the pockets of their promoters. Our school could not use the methods employed by the organizers of sugar plantations; nor is our appeal the same.

When Sir Francis Lovell had decided that he wanted more money for the London School, he went to Bombay, Ceylon, Singapore and Canada, and told the British residents of these places what he wanted. They gave him in cash the sum of $50,000 with an annual subscription of $5,000. More than this, Sir Francis secured from the Federated Malay States an appointment to the value of $3,550 yearly, with free furnished quarters. If phlegmatic Englishmen give in this way for a purely altruistic institution away from home, what might Americans not do if the matter were placed before them in the right light?

In Hawaii we have our own rich men too, and some of them are philanthropists. If they did not help to establish a school, they might, when it was established, provide a fund for scholarships and other incentives to study and research. In touch would be the hospitals, asylums and other eleemosynary institutions, the Board of Health, Kalihi Receiving Station, and the Leper Settlement itself. What an incomparable clinic the last named would be! In 1901 Mr. Rockefeller founded the Rockefeller Institution for Medical Research the objects of which are known to all. The institution began with $200,000, and, in 1902, Mr. Rockefeller gave $1,000,000 for a site. The methods of this institution deserve careful study by all interested in kindred schools. When Drs. Brainerd and Goodhue, in 1837, proposed to their associates in the embryonic city of Chicago, the establishment of Rush Medical College, they were met with the question—where is the money coming from? It was a very natural question for a practical man to ask of these medical visionaries who had nothing but the idea in hand. With the assurance of enthusiasts the world over, the founders answered—"From the students, of course". And so the money came in, and has kept coming in, until, in my day, over 800 students were glad to pay in their fees.

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Excessive use of drugs is the cause of death of 20 percent of the population of Austria, according to official statistics, while 44 percent of the medical profession in that country die of heart disease.

IMMIGRATION.[1]

BY
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The subject of immigration, is of the greatest interest to us all, not only as medical men, but also that we may intelligently discharge our duties as citizens. It is only my intention to discuss the subject of immigration briefly from its medical standpoint, but a short review of the legislation upon this subject may not be amiss.

The immigrant has been viewed with suspicion since the birth of the nation. In John Adams' administration, we had the Alien Act. The Hartford Convention, 1812, proclaimed: "The stock population of these States is amply sufficient to render this nation in due time sufficiently great and powerful." In the discussion of the bill before Congress to provide a territorial form of government for Kansas and Nebraska, Senator Clayton of Delaware, introduced an amendment to confine the elective franchise to native Americans, but this amendment was lost. The first legislation pertaining directly to immigrants was passed March 2, 1819. A clause in this act provided for their enumeration, also the registration of the age, sex, and place of birth. It was hoped to regulate by this law the transportation of immigrants, to prevent overcrowding on ships, and to provide for the correction of abuses on vessels.

In the debate on the bill approved May 29, 1830, dealing with the preemption rights of settlers on public lands, Senator Merrick of Maryland, offered an amendment barring aliens from participation in such privileges, but the amendment failed. In the fifties, the "Know Nothing" movement attained a large following. Its adherents not only recommended discrimination against aliens, but persecution as well. Some years after this, however, the development of the United States proceeded so rapidly with the assistance of the alien that almost all opposition died away. Laws for the regulation of immigration have always been the result of popular demand, and they have been passed not so much with the view of lessening the total number of immigrants, but with the view of preventing the admission of certain undesirable classes.

For many years then, the subject of immigration has been a question which received much attention from the people of the United States, but it was not until 1875 that the views of the majority crystallized into any real legislation. Since that time, however, Acts of Congress relating to immigration have followed one another in rapid succession. Each law added to the restrictions to be imposed upon arriving aliens, until the list of causes for exclusion has become a very long one. It is quite natural that a country like the United States whose future in a large measure depends upon the class of people who are to be granted the privileges of citizenship, should wish to admit only those who are the most desireable. It was not until the act of 1882 that any cognizance was taken of the physical condition of the immigrants. In this law, it was provided that "Any lunatic, idiot, or any person unable to take care of himself, or herself, without becoming a public charge . . . . . . shall not be permitted to land." It will be seen that the exclusion was only conditional, and since there was not much risk involved for the friend of the inflicted one to state that he would take care of such persons, the object of the law was defeated in the great majority of instances. Another unsatisfactory feature was the fact that although the law was a national one, it was administered by State officials upon the authority contained in special contracts with the Secretary of the Treasury. Thus, it was quite possible that an immigrant refused admission at New York, for instance, might gain admission elsewhere. The next act was passed in 1885 and is generally known as the Contract Labor Law. This law contained no medical features. In 1888 came the Chinese Exclusion Law.

The act of 1891 was a more radical step than any that had heretofore been attempted. It was the first time that persons suffering with certain medical and physical conditions were absolutely excluded, and for the first time the medical examination of all arriving aliens was provided for. This latter examination was to be made by the officers of the Marine-Hospital Service. The law provides that "All idiots, insane persons, paupers, or persons likely to become a public charge, persons suffering from a loathsome or a dangerous contagious disease ......shall be excluded from admission to the United States."

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[1] Read at the second annual meeting of the Philippine Islands Medical Association, Manila, P. I., March, 1905.

It will therefore be seen that the medical features of the immigrant legislation consists of two simple divisions. The first, for those suffering from afflictions for which they are absolutely excludable and second, for those suffering from afflictions which may cause them to be likely to become a public charge. The phraseology of the law has been found in practice to be very fortunate. Whenever a certain disease, owing to its contagious character, becomes a menace to the public health, it can be placed upon the excluded list, or if persons suffering from certain afflictions are found to become public charges, the matter can be regulated by administrative action and thus the tedious delays incident to legislation avoided.

The constant aim of those having the medical inspection in charge has been to build upon practical rather than theoretic grounds. From year to year as experience increases, it has been found desirable to augment the list of diseases that come under both divisions of the law. The last Act of Congress pertaining to immigration was passed in 1903. From a medical standpoint, that law still further increased the list of absolutely excludable diseases. The clause containing the addition specifically states "Insane persons, epileptics, and persons who have been insane within five years, or persons who have had two or more attacks of insanity at any time previously......shall be excluded from admission into the United States."

It will perhaps be interesting to discuss more in detail those diseases which are on the absolutely excludable list, and more particularly those which give rise to the greatest number of rejections.

The disease which easily ranks first in this respect is trachoma. The remark is often heard "Why should this minor disease, a mere inflammation of the eyelid, be the cause of so much concern?"

Trachoma was made an excludable disease in 1897. The medical profession and more particularly the physicians in charge of the eye clinics in large cities strongly urged this step. They pointed out that their clinics were overrun with trachoma cases. Treatment pursued month in and month out was practically of no avail. Persons suffering from other eye diseases who really could be helped were crowded out. The contagious character of the disease constantly led to the infection of others. A case of trachoma introduced into a crowded tenement often caused the disease to spread throughout a whole block like wildfire. The cost of treating trachoma was becoming a heavy item of expense to the communtiy. Further investigation showed that 15 percent of the inmates of the public blind institutions of the United States became blind on account of trachoma. Since the number was constantly increasing, it became quite clear that the cost to the body politic would soon become a heavy burden. History shows that trachoma has been one of the scourges of humanity for many centuries. The ancient Egyptians suffered from it four thousand years ago. The eyes of well preserved mummies offer unmistakable evidence as to its presence. Celsus, an ancient Roman, has left an excellent description of the disease at it existed twenty centuries ago. It seems to have had its origin in Egypt, and as the facilities for travel have increased, so also has increased its spread through out the world. So contagious is the disease in the land of its origin, that but few of the natives escape an attack. Those who have visited Egypt have no doubt been struck with the enormous number of blind persons that are encountered. Like most contagious diseases, trachoma flourishes where the rules of sanitation are least observed. In ancient times, the disease often became epidemic. An epidemic was started in Europe in the twelfth century, when the Crusaders after warring with the Saracens, returned from the Holy Land. In 1798 when Napoleon opened his Egyptian campaign, some 20,000 of his troops are said to have contracted the disease. Many became blind, and the failure of some of Napoleon's subsequent ventures is ascribed to this affliction. When his soldiers returned to Europe, they started one of the most disastrous epidemics of which we have any record.

That epidemics are not confined entirely to ancient times shown by the following extract taken from a letter received from Dr. Lederle, the Commissioner of Health of New-York:—55,470 children were examined; 6,670 exhibited contagious eye disease, a percentage of 12 percent; 2,328 of these were of the severest type of trachoma, necessitating almost immediate operation; 3,243 were trachóma of milder type. Some schools have as high as 22 percent of cases."

From the foregoing it will be observed that there was ample reason for placing trachoma upon the list of excludable diseases, and furthermore, that the wisdom of the course was fully justified by subsequent events.

Favus, a contagious disease of the scalp and more rarely of the finger nails was also placed upon the excludable list. This affliction flourishes in the old-world centers, where filth and overcrowding attain their maximum. The early exclusion of this disease from the United States has been so effective that the disease has become so rare that the great majority of medical men have not even seen a case.

Leprosy and active cases of syphilis, for obvious reasons, were at once placed in this category.

In 1901, cases of tuberculosis in which the tubercle bacillus could be found in the sputum were added to the excludable class. A number of medical men in the United States denounced this course as inhuman. However, when it is remembered that this disease is very communicable, that many of the immigrants would soon become public charges, and that the United States Government is not a charitable institution for the afflicted of other countries, and that the introduction of every case adds just one more center of infection, it is believed that the majority of the profession will indorse this step.

Epileptics, idiots, and the insane are specifically mentioned by law, and since the two latter have been included by Congress in the three Acts which were passed since 1882, it may be safely assumed that the American people are fully convinced of the justice of the course.

The second class of diseases which come under the head of likely to become a public charge is a very long one. The examining medical officer certifies that the disease or deformity from which an alien suffers is likely to affect his ability to earn a living. Such certificate is not final. The immigrant is afterwards taken before a board of special inquiry which is usually composed of three immigrant inspectors who are laymen. If the immigrant can satisfy this board that he or she will not become a public charge, such person is released. The proof commonly required consists of furnishing a good and sufficient bond, by which the government may indemnify itself in the event of its having to incur any expense in the immigrant's behalf. The most common disease for which rejection takes place is valvular disease of the heart. This class of cases has been a great burden upon the charitable institutions in the past, and it is quite natural that it should be so. The majority of the immigrants are laborers, and after a short period of the strenuous exertion which is required in America, they suffer from a rupture of compensation, and in many cases become a charge upon the community in which they reside, for many years.

Hernia is another frequent cause of rejection. Two points are always considered in making a certificate for this condition: first, the immigrant's occupation and the extent to which the hernia is likely to affect the ability to earn a living; second, the probability of an early operation. In the latter case, application for treatment would probably be made at a charity hospital, in which event the alien would become a public charge for at least several months.

The list of diseases which come under this class multiplies itself indefinitely when it is considered that deformities and diseases like poor physique, chronic rheumatism, nervous affections, malignant tumors, senility, debility, defective eyesight, etc., may seriously impair the immigrant's ability to take care of himself. Another important matter from an economic standpoint, as well as being highly humanitarian is the detection by the medical inspection of such persons as are suffering with temporary afflictions. Under this head come diseases like pneumonia, enteric fever, malaria, fractures, and any of the other acute medical or surgical maladies. Such persons are placed in the hospitals until they have recovered, at the expense of the transportation company bringing them. The expense of such temporary treatment in the past has amounted to $20,000. for each 100,000 aliens that arrive.

In the Philippines, the same immigration laws apply as is the United States. Alien immigration has been an important factor. During the fiscal year ended June 30, 1904, there arrived in the Philippines 6,111 immigrants. Of this number, 351 were rejected for medical causes, which is a percentage of 5.75 percent. The rejections were nearly all made under the head of the absolutely excludable diseases. It would perhaps seem that in the examination of over 6,000 aliens, many more or less grave physical defects should have been detected. But, when it is remembered that with the exception of an insignificant few, the entire immigration that comes to the Philippines is Japanese; that they are nearly all male adults in the prime of life, and that this race is noted for its sound physique, the matter assumes a new aspect. Another important consideration is the fact that the tide of immigration to the Philippines has only begun. History shows that when immigration to another country commences, at first only the more robust individuals go, and after they establish themselves the weaker ones follow.

While there has been considerable discussion in the United States and in these Islands as to the advisability of making the immigration laws of the Motherland apply in their entirety to the Philippines, yet very little has been said that could be constructed as being unfavorable to the application of the medical features of the law. The matter may be viewed from two standpoints: First, whether there is any danger of infecting in the habitants of the Islands with diseases from which they do not suffer at present; and second, from an economic standpoint. With regard to the introduction of communicable diseases, the ones most likely to be introduced would be trachoma and favus. Trachoma prevails only to a very limited extent among the natives, and such cases as do occur are usually of a very benign nature. If, then, the more virulent cases from other countries were allowed to come in freely, it may be safely predicted that its spread would be very rapid. Favus is also a very uncommon disease among Filipinos.

The immigrants who are rejected on account of having various disabilities would only be a liability upon the country, and for that reason we are much better off without them.

In view of the foregoing, it may be said that the enforcement of the medical clauses of the immigration law has been of the greatest benefit to the Philippines, both from a humanitarian and a practical standpoint.

Discussion: Major E. C. Carter.—I was not present to hear this paper from the beginning. I am interested in all matters pertaining to sanitation. I am interested in the Bureau to which Dr. Heiser belongs. The two points brought out by Dr. Heiser are the two which must decide the question of the admission of an immigrant. It is the only safe policy. It is very true that a great number of people who immigrate from the old world are much better off here than they would be at home. It seems a hardship to send them back. Much complaint is made of this policy, but we cannot safely act otherwise. Trachoma is certainly a sufficiently grave disease to warrant the exclusion of one suffering from it. So far is I know it is very rare in the Philippines. I believe that the most rigid regulations should be passed and enforced, in order to protect the people from this disease. I was not aware of the existence of favus; so far as I remember, I have not seen more than one case of it here. It is a disease which also spreads very rapidly, and against which protective measures should be taken. It is the nation's right to pass such laws as will preserve its vigor and physical integrity. This vigor and physical integrity are essential to enable the nation to hold its own in the struggle for life.

DIGEST OF LITERATURE.

THE FORMIC ACID SALTS.

BY
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After a long period of oblivion formic acid has recently again attracted the attention of physicians both on the Continent and in America. An "*electuarium magnanimitatis*," prepared by macerating the bodies of ants in alcohol and water and adding essence of cloves, and an "*oleum formicarum*" are mentioned in Lémery's Pharmacie Universelle as early as 1697. Hulse (1670) and Dale speak of the stimulating effect of ants in James' Universal Dictionary. Formic acid was recommended by Woolden for chronic ulcers, and by B. Ewald in 1702 in chronic skin eruptions, in dropsy, and for the relief of gouty and rheumatic pains. However, the therapeutic virtues of formic acid were not universally acknowledged; Beaumé in 1777 asserted that the oil of ants had no more therapeutic action than olive oil. It is chiefly through the writings of Clément, Garrigues, and, quite recently, Huchard, that the use of formic acid and its salts has been revived. Clément dwells more particularly on the stimulating action (*action tonimusculaire*) of the formates and asserts that after their use the amount of work performed with a Mosso ergograph is increased by 85 kilogrammeters (from 21 to 196). His observations were controlled by Huchard, who is less enthusiastic about the drug; he found that the vital capacity was but little increased and noted a fall in the blood-pressure, due probably to vasodilation; while according to Clément the blood-pressure is increased when the heart muscle is weak and diminished in the presence of hypertension due to disturbances of the peripheral circulation. Huchard observed that after withdrawal of the drug the muscular contractions provoked by the ergograph became painful, and suggests that perhaps formic acid acts as an anesthetic to the muscles and in that way lessens the sense of fatigue. He was more impressed by the diuretic action of the drug, which he found to be quite marked, manifesting itself on the first day, and disappearing one or two days after the discontinuance of the drug.

Formic acid is prepared by heating oxalic acid and glycerin together; the latter dissolves into carbon anhydrid and formic acid, and the various salts are then prepared by saturating the acid with carbonates or oxids. Sodium formate, the salt chiefly used in medicine, appears in white, rhomboidal crystals and is freely soluble and deliquescent. Lithium formate is said to be a more active diuretic, but is more irritating to the stomach. According to Rabuteau sodium formate is converted into sodium bicarbonate in the body, while Gréhant and Quinquaud say it is excreted in the urine unchanged. Formic acid appears in the urine 15 minutes after ingestion, and elimination continues from 4 to 6 days after withdrawal of the drug.

The indications for the use of the formates are given by their stimulating and diuretic properties. The first is not confined to the voluntary muscles; sodium formate stimulates the smooth muscle fibers of the stomach and intestines, improving the appetite and aiding digestion; strengthens the muscular coat of the bladder; and increases the contractility of the larynx so that the voice becomes stronger (Stern). Clément reports excellent results in catarrhal pneumonia with general debility in the aged; in influenza with pulmonary congestion; in incontinence of urine; and particularly in the treatment of muscular tremors, for the control of which he believed formic acid is more efficient than hyoscyamus. Huchard recommends the formates for their stimulating effect in neurasthenia, diabetes, asthenic grip, the adynamia of infectious diseases, during convalescence, and in various forms of anemia; in arteriosclerosis and in chronic nephritis sodium formate is a useful diuretic, increasing the quantity of urine, which it renders less acid, and causing a diminution of albumin when there is albuminuria. According to Garrigues it is useful in the treatment of tuberculosis for relieving insomnia and improving the appetite. In atonic conditions of the urinary organs Heinrich Stern advises the use of formic acid instead of cantharides; also in dropsy, in gouty and rheumatic conditions and in debilitated states generally. In India the drug enjoys a certain reputation as an aphrodisiac. Locally, formic acid has been used as an epispastic and for tuberculous lesions of the skin, lupus, syphilitic ulcers, epithelioma and sarcoma.

The dose of sodium formate recommended by Clément, Huchard, and others is from 2 to 4 grams (30 to 60 grains) a day, well diluted in a simple watery vehicle. Lithium formate is more irritating than the sodium salt and should be given in somewhat smaller doses. For local applications formic acid may be used in the strength of from 5 to 10 percent.

S. Solis Cohen[1] has employed various formate salts (alkaline and metallic) and finds that in the small doses he prefers 1 to 4 grains thrice daily, the diuretic action is not marked, but that there is a general tonic and stimulant effect best expressed by the Bartholonian translation of the French *bienetre*, "increase in the sense of well-being." This is especially noticeable when the drug is used in conjunction with lecithin or glycerophosphates in neurasthenoid or neurasthenic states, or in abnormal fatigue from overexertion, mental or physical. It is not well, in his experience, to continue the drug for a long time, or symptoms of overstimulation with resultant weakness and irritability will develop. It should be given for a week or ten days, at most a fortnight, and then discontinued or intermitted. After an interval of a fortnight it can be resumed if necessary.

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RECENT CONTRIBUTIONS TO THE SECONDARY DANGERS OF ANESTHETICS.

BY

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The most important contributions to inhalation anesthesia have been along the line of emphasizing and determining the dangers of these drugs. Both ether and chloroform, as is well known, are irritant to the kidney, and Thompson (Brit. Med. Journal, March 25, 1905) has shown that although there is at first some increase in the secretion of urine in the early stages of anesthesia, during the period of full narcosis there is almost a complete suppression of urine. In his observations the effect seemed more marked after ether than after chloroform. The question as to which of these two agents are more harmful to the kidney is as yet not entirely beyond the realm of discussion. Goodwin (Therapeutic Gazette May 15, 1905) found after chloroform 40 percent of the cases showed either induced or increased albuminuria, while after ether 39 percent showed albuminuria. When, however, ether was preceded by nitrous oxid the tendency toward renal irritation seemed remarkably reduced, only 12 percent of the cases showing albumin in the urine. As his statistics covered in all only 195 cases they cannot be accepted as conclusive evidence.

A very interesting studgy of the conditions of the kidneys which render chloroform especially dangerous was carried out by Offergeld (Arch. klin. Chir. 1905, Vol. 75, page 758). His experiments were performed upon rats, guinea-pigs, and rabbits. After prolonged narcosis he found, besides fatty degeneration in heart and liver and kidneys, signs of renal inflammation. The fatty changes in the kidneys were more marked if the organ had been made hyperemic by ligation of the renal veins; also obstruction in the ureter increased the tendency to fatty degenerations in the kidney. In animals in which he produced a chronic nephritis with with alcohol, lead, or adrenalin, he found not only the signs of the interstitial nephritis produced by the poison, but also active glomerular desquamation caused by the chloroform. In acute toxic nephritis chloroform caused a rapid intensification of the process, giving rise to uremia. Septic nephritis likewise favored the occurrence of kidney lesions after chloroform, but pregnancy did not do so. As regards the length of time required to recover from the fatty degenerations, he found that animals killed on the third day after chloroformization showed marked fatty changes in the urinary tubule, on the fourth day there was a noteworthy lessening in the amount of fat, and after the eighth day there was no demonstrable histologic lesions.

The poisonous effect of chloroform upon the general protoplasm has been known for a long time. Bevan and Favill (Journal American Med. Assn. Sept. 2, 1905) report a case in which after operation for appendicitis, and anesthesia with chloroform, the urine showed diacetic acid, trace of acetone, and a considerable amount of albumin. The patient died five days after operation. Postmortem showed fatty liver, swollen spleen, multiple ecchymoses with chronic nephritis, edema and congestion of the lungs. Microscopically, a large amount of granular material in the glomeruli. Carmichæl (Lancet, August 12, 1905) also reports a similar case of widespread fatty degeneration ending fatally.

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[1] Personal communication.

That these degenerative changes in the protoplasm are not peculiar to chloroform has been shown by Mueller (Arch. f. klin. Chir. 1905, vol. 75, page 896), who found that ethyl bromid, ethyl chlorid, and ether were all capable of causing similar changes. The intensity and extent of the fatty metamorphosis is dependant upon the length and number of the narcoses. Ordinarily the animal recovers in a short time from this condition, but if a second anesthesia is produced before complete recovery, the condition is made very much worse and passes over into a necrosis of the cells. It is immaterial whether the same narcotic or another is used for the second narcosis, the effect is the same. The fatty changes in the second narcosis will be twice as severe and widespread as in the first; there is no beginning of repair of the fatty change until the last trace of the narcotic is eliminated from the blood. It is therefore advisable never to produce a second narcosis within three, or more, days of the first anesthesia.

The activity of the various narcotics in producing these changes are in direct proportion to their narcotic power. The mixture of anesthetics, so far as the production of fatty change goes, has an advantage. Ether has less tendency to produce degeneration than chloroform, and is not so dangerous because the heart is less affected than with the chloroform. On the other hand, ether produces greater changes in the lungs. From his experiments he believes that fatty changes in the heart, kidney, or liver, is contraindication to inhalation anesthesia.

HYPERTROPHIC STENOSIS OF THE PYLORUS.

BY

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A few isolated cases of hypertrophic stenosis of the pylorus in infants were reported during the century preceding the appearance of Hirschsprung's paper in 1888, which paper began the record of modern cases, and established the identity of the disease. Since that time, the reported cases have rapidly multiplied, and the condition is found to be not at all uncommon. The accurate observations of a number of investigators have established for it a definite symptomatology, which admits of its ready recognition. The word "congenital" has been frequently prefixed to the title of the disease' but this is often misleading. G. F. Still, especially, calls attention to the fact that the symptoms very rarely commence until the child is some days or weeks old; so that there is considerable doubt whether or not the causative condition is present at birth.

Pathology.—The findings at autopsy and at the operating table are quite uniform. There is invariably found a very hard, firm, pyloric tumor, based upon a marked overgrowth of the muscular tissue. The circular muscle fibers are especially hyperplastic, but the longitudinal coat may also be increased in thickness. The lumen of the pylorus is diminished to a greater or less extent, causing a complete or incomplete obstruction, as the case may be. An increase of connective tissue has been found by some observers (Hirschsprung, Finkelstein, Schwyzer, Meltzer). Thickening of the submucosa has been reported (Thomson, Still), and also of the mucosa (Ashby, McCaw, and Campbell). The mucous membrane is usually thrown into longitudinal folds, or into a single large fold running through the pylorus (Cautley, McCaw, and Campbell, and others). This point is of importance in the surgical treatment of the condition, as these folds may obstruct the lumen of the pylorus. The whole musculature of the stomach is hypertrophied from the effort to compensate for the narrowness of the opening. Torkel has made a pathologic study of the condition, and reports that in most cases, there is a diffuse hyperplasia of the musculature, retaining microscopically the structure of the gastrointestinal muscularis. His investigations also show that enclosures may be found in this hyperplasia, explained only by the theory of displaced embryonal tissue. This points undoubtedly to a disturbance of development. Wachenheim, J. Schmidt, and also, to a certain extent, F. W. Shaw, recognize two clinical and pathologic varieties: (1) a true hypertrophy, curable only by operation, and otherwise ending fatally in a short time; (2) a pyloric spasm with little or no hypertrophy, constituting the cases which recover from purely medical treatment.

Pathogenesis.—Three theories have been advanced to explain the existence of hypertrophic stenosis of the pylorus:

1. Pfaundler regards it as a physiologic postmortem finding, *i. e.*, a state of contraction of the pyloric muscle, fixed by death, a condition not infrequently found at autopsy. The clinical picture, then, is due to a pure spasm of the pylorus. He distinguishes three contractile conditions of the stomach at the autopsy table:

(a) the "diastolic" stomach, relaxed, and relatively large,—the stomach ordinarily found; (b) the "systolic" stomach, small with the muscular layers in a state of contraction; (c) the "semisystolic" stomach, with the pyloric part contracted and the rest relaxed. Pfaundler maintains that the systolic, but especially the semisystolic stomach represents the condition found in congenital hypertrophic stenosis. His observations, however, have never been seconded by other investigators, and the finding of a true pathologic condition of the tissues, as described above, would tend to disprove his theory.

2. The second theory originated with Thomson, and has been supported especially by Still and by Ashby. These authors maintain that there is a true hypertrophy of the pylorus, but that it is secondary to a prolonged primary spasm of that opening. This spasm is of intrauterine origin, and probably results from disturbances of coordination in the motility of the fetal stomach. Here again, however, the finding of hypertrophy in structures other than the muscularis would tend to upset this theory, as showing that there is more than a mere compensatory hypertrophy.

3. The third, and original theory of Hirschsprung, is advocated by Meltzer, Cautley, Bernheim-Karrer, Ibrahim, and the majority of investigators in this subject. It seems to be nearer the truth than the other propositions, and agrees more closely with the pathologic findings. It maintains that there is a true malformation,—a primary, abnormal hypertrophy of the muscular layer of the pylorus, with actual stenosis of the opening. Spasm, if at all present, is secondary to the muscular hypertrophy. The fact that the symptoms almost always develop some time after birth, has been brought forward in support of the spastic theory. But if this theory of primary, congenital hypertrophic stenosis be accepted, then the failure of the symptoms to develop at once may be explained by the fact that the expulsive power of the stomach first compensates for the pyloric obstruction, but later weakens and fails to overcome the stenosis. The theory of primary malformation is substantiated in many cases by the finding of other congenital malformations in the same case, such as atresia ani (Ashby), stenosis in the region of the sigmoid (Sehwyzer), dilation and hypertrophy of the rectum (Stern), hydronephrosis (Still), etc.

Symptomatology and Diagnosis.—For some unknown reason, hypertrophic stenosis of the pylorus is found especially in children of the male sex. A hereditary tendency has been observed and recorded by Ashby, Freund, Koppen, Ibrahim, and some others. It is quite characteristic that the infant may be perfectly healthy at birth to all appearance, and may get along very nicely for one to three weeks. According to Still the symptoms never begin later than the seventh week. The first and most striking symptom is vomiting, which often sets in without any apparent cause, even when the patient is being carefully fed on the bottle or breast. At first it may be slight and infrequent, but soon becomes quite characteristic. When the condition is fully developed, the vomiting occurs immediately after a feeding, or within a half hour, and is forcible in character. It does not occur after each feeding, perhaps only two or three times in 24 hours, and consequently is of large amount, representing the accumulation of several feedings in a dilated stomach. It persists in spite of alterations in the food and other treatment that usually controls dyspeptic vomiting. The vomit very rarely contains bile. Constipation is the rule, the stool being infrequent, small in quantity, green and containing mucus. Their meconium-like character is considered of diagnostic value by some authors. The diarrhea, which so often accompanies dyspeptic vomiting, is very rarely present in this condition. Fever is likewise absent. The child is always ravenously hungry. It loses rapidly in weight, and emaciation becomes extreme.

Given these symptoms in a young infant, the diagnosis of hypertrophic stenosis of the pylorus should always suggest itself, and may even be made without the demonstration of the two pathognomonic signs,—visible gastric peristalsis, and palpable tumor of the pylorus. The latter sign may be impossible of detection in some cases, and the peristaltic movements may not be noticeable in the later stages of the disease, when the stomach is greatly dilated and the muscular contraction is much diminished in power (Scudder and Quinby). Ibrahim has observed in all of his cases diastasis of the recti, especially in their upper part, which facilitates greatly the observance of peristalsis. These movements form a very striking phenomenon, appearing as globular swellings, which pass successively across the epigastrium from left to right. They may not be seen when the stomach is empty, and must be watched for especially after a feeding. The tumor of the pylorus, when palpable, may be felt a little to the right of, and a little above, the umbilicus. It is rather deeply seated and slightly movable.

The gastric contents have been systematically studied by Ibrahim. He found nothing characteristic in their appearance. Mucus is present in the usual quantities. Lab-ferment is present, and lactic acid usually absent except for occasional traces. The hydrochloric acid is usually high, constituting a condition of marked hyperacidity. In some cases, however, notably that of Robertson, no free hydrochloric acid was found. Knopfelmacher, Bernheim-Karrer and others have attributed the pyloric stenosis to a spasm, induced by hyperchlorhydria.

Treatment.—Stern, in 1898, was the first to attempt operative treatment of hypertrophic stenosis of the pylorus after a correct diagnosis of the condition. Although his operation was unsuccessful, subsequent attempts by other surgeons had more satisfactory results, and surgery was soon adopted as the chief method of treatment. In recent years, however, it has been found that certain nonoperative measures will succeed in many cases. At present the profession is divided into two camps. In one are ranged Scudder and Quinby, Schmidt, H. L. K. Shaw, and Elting, Morse and F. G. Murphy, etc., who claim that no case of true hypertrophic stenosis can be cured by any means other than operation. Those which are apparently cured by medical means are either cases of pure spasm without hypertrophy or are only temporarily relieved by this treatment. On the other hand, Freund, Blaxland, Still, N. J. and J. R. Harper, and many others, report cures without operation.

The medical treatment is best summarized by Ibrahim. Lavage seems to be the mainstay, and should be performed once or twice daily at first, always before a feeding. As the child improves the procedure is made less frequent. The nourishment is of the greatest importance. When the infant is being breast-fed, most authors advocate continuing that form of nourishment, giving it, however, in smaller quantities at first than are sufficient for the the nutrition of the child. Freund, however, takes the patient from the breast and puts it on whole milk. If the infant is being artificially fed, various authors advocate peptonized milk mixtures, peptonized whole milk, whey, raw meat juice, buttermilk, etc. The chief points to be observed are to give small quantities at a time, and to keep the child as quiet as possible after feeding. The deficiency in nourishment and the thirst may be partly compensated for by enemas of normal saline solution and hypodermoclysis, while the Harpers advocate abdominal massage with codliver-oil. Some of the German authorities, (Ibrahim, Heubner), advise poultices applied to the abdomen after feeding. Others, (Knopfelmacher, Freund, Loew,) proceeding upon the theory of hyperchlorhydria, give small quantities of Carlsbad or other alkaline water after feeding. Gain in weight should be the principal guide to improvement, but this does not necessarily begin at once, on account of the small quantities of nourishment given. If the patient continues to lose ground, however, operation should not be deferred too long, until the child is too exhausted and emaciated to permit of a good chance for recovery.

The question as to what operation should be performed is still unsettled. Cautley and Dent find that gastroenterostomy has been the favorite operation, but their experience is in favor of pyloroplasty, giving next preference to Loreta's operation of dilation. Scudder and Quinby condemn the latter unreservedly, and prefer posterior gastroenterostomy, avoiding the anterior operation if possible. Nicoll uses a combination of the Loreta method with gastroenterostomy, if the little patient is in a condition to stand the double operation. Pylorectomy is out of the question as being too severe an operation.

The appended bibliography is by no means complete, but includes the more important articles on the subject, especially those of recent date.

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RECENT EDITORIAL OPINIONS.

Journal of the American Medical Association.—Tuberculosis and immunity. Theobald Smith's lecture restates and emphaisizes many points. In most cases the bacilli are inhaled but they may pass through mucous membranes without being detained. We are still at the beginning of the subject of immunization. Partial immunization cannot eradicate tuberculosis. Careful isolation of the sick, combined with protective inoculation, seem to be the weapons with which we must attempt to combat tuberculosis.—Life insurance examination fees. Physicians should unitedly refuse to accept the cut from $5.00 to $3.00 made by some of the old insurance companies. Action should be taken by every county medical society in the country.—Uric acid solvents. Probably the most efficacious ingredient of the various uric acid remedies is water, although the alkali acts mildly as a uric acid eliminator. Until we know more about gout we can do no better than to treat the gastrointestinal tract and the liver, to promote elimination and give the patient the benefit of certain symptomatic and local treatment. If alkali and water are to be used why not give the patient daily several quarts of water to which has been added baking soda and precipitated chalk? This would accomplish all that can be expected of expensive mineral waters and so-called uric acid remedies. —The regeneration of limbs. The assertion of Dr. Morgan of the possibility of the regeneration of limbs in the higher vertebrates can not be said to be an altogether improbable thing. It is a process well known in the lower vertebrates and the invertebrates.

Medical Record.—Mechanism of the aortic valves. Mai has shown that there is an inverse relation between the size of the opening and the force of the eddies above the leaflets previously described by others. The oblique muscle bands of Krehl, by narrowing the aortic orifice, render the eddies more forcible and aid in closing the valves. Mai believes that these eddies are uninfluenced by conditions in the aorta, which would make the snapping closure of the valves so familiar in nephritis due to the cardiac hypertrophy instead of high arterial tension.—Radical operation for cancer of uterus. Clark has reached the conclusion that more is lost than is gained by the extremely radical operation for this condition. He advises the abdominal extirpation of a carcinomatous uterus, best done by the actual cautery; but practically no dissection of the pelvic glands.—The principles of ethics. Members of the Medical Society of the State of New York are emphatically advised to vote against the adoption of the principles of ethics of the American Medical Association. This code with its weak enacting clause is even more silly than it is inconclusive.—Gasoline in the sewers. Sewer explosions in New York have been traced to gasoline coming from automobile garages. The Health Department has notified the owners to cease the pollution or stand arrest.—Primary cancer of the appendix. Baedauf reports three cases and concludes that this form of tumor is present in from one-third of one percent to one percent of all removed appendixes.

New York Medical Journal.—Cans for food. The Secretary of Agriculture has issued explicit directions regarding the vessels for holding preserved foods. The Committee on Food Standards of the Association of Official Agricultural Chemists is still further to consider this subject.—Aseptic fever after operations. Charrin and Jardry say the cause of this fever is chemical and acts for only a brief period. The condition is distinguished from infections by the facts that the tongue remains partly moist, the urine is rather abundant, and the facial expression is comparatively natural.—Kala-azar. Rogers now concludes that the Leishman-Donovan body belongs to the genus *Hepatomonas* and not to the *Trypanosomas*. It has been found in the leukocytes in the circulating blood.—Recalcification. Ferrier advises this process in the treatment of pulmonary tuberculosis; it is less satisfactory for tuberculosis in general. The deficiency in calcium salts is supplied by giving, a half-hour befom each meal, a glass of water charged with calciuer bicarbonate and three times daily 6 grains each of calcium carbonate and tribasic calcium phosphate with 5 grains of sodium chlorid.—BACTERIOLOGIC DIAGNOSIS OF SYPHILIS. The course now advisable is to examine the scrapings from the sore; if negative for the spirocheta, remove a piece of tissue and section; finally, if necessary, inoculate a monkey.

Lancet.—APATHY OF LONDONERS REGARDING THEIR HOSPITALS. The voluntary system of hospital support which has been little less than a national glory threatens to be imperiled. The great majority of Londoners do not subscribe and the hospitals are maintained by a small number of people. There are few in the middle classes and none in the upper who could not contribute to the fund; their lack is due rather to want of thought than to want of sympathy. Apathy in any form either in those who can give or can administer is a sin of the first magnitude. A failure of the voluntary support would be metropolitan disaster and disgrace.—TUBERCULOSIS AND UNCLEAN MILK. Public opinion is awaking from the torpor caused by Koch's announcement in 1901 regarding the comparatively little danger of milk from tuberculous cattle. There was also a strange tendency at that time to consider that tuberculosis was the only disease to be regarded as worthy of note in connection with milk and that when it was disposed of the entire question was settled. From recent studies regarding tuberculous infection it is not reassuring to know that at least 8 percent of milk sold within the limits of London is derived from tuberculous cows. As in addition many other diseases may be transmitted by milk the necessity for cleanliness is obvious.—CANCER CURES. Many widely different methods have been employed in the treatment of cancer and remarkable results have been reported. But often when the widely heralded cures (?) have been tried by other persons they fail to produce any beneficial effect. The chief explanation of this inconsistency is to be found in errors of diagnosis. Even now with all our diagnostic aids errors as to the nature of a tumor are not infrequent; they must have been common in the past. Another factor is the irregularity in the course of cancer. Cessation of growth, atrophy, or entire disappearance may occur when no treatment has been employed. If drugs were given during this time they get the credit. In the vast majority of reported "cures" of cancer the growth was probably not malignant. Jensen's work with cancer in mice furnishes a basis for the trial of remedies and the future must be regarded as hopeful.—CRIMINOLOGY IN THE CURRICULUM OF LEGAL EDUCATION. The conflict between medical and legal opinion as to the criminal responsibility of the insane has been largely settled in favor of the opinions of physicians. The legal mind is not yet well enough instructed in the principles that underlie the determination of the decision in such cases, and the example set by the Paris Faculty of Law is noteworthy as an advance in this direction. They have instituted a course of instruction in criminal anthropology, mental diseases, legal medicine and cognate subjects. A certificate will be given to those who take the course. In the University of Berlin a course of lectures on criminal anthropology has recently been inaugurated. There is a feeling among some in England that criminology as a subject of education is being overdone; but when the educational system is eventually reorganized in that country it is hoped that something in this line will be provided.—THE CLOTHES BRUSH. The brushing of dusty clothes in living rooms is not only opposed to ideas of cleanliness but may lead to the spread of disease by means of the dust always on clothes in large quantities. A room should be reserved for the brushing of clothes just as a separate place is used for beating carpets. Some expedient, as a wet sheet suspended in the room, might be used for trapping the dust and thus aid in preventing the dissemination of the contained bacteria. The use of some kind of vacuum brush would in a way be ideal.—RECENT ADDITIONS TO THE MATERIA MEDICA. Two new preparations of iodin may be of therapeutic value. Chloroform is said to be superior to alcohol as a solvent. The 10 percent solution produces a less persistent stain of the skin, does not cause desquamation or itching, and is readily absorbed. The solution is also recommended for internal use. Another new preparation for internal use is iodomaisin, a combination with maisin, an albuminoid principle of the gluten of maize. This is readily tolerated by the stomach. Other new substances are apocodein hydrochlorid, a laxative; palladium chlorid, used in pulmonary tuberculosis; aldol and malonal, hypnotics; and salene, a liniment for use in lumbago and articular rheumatism.—STERILIZATION OF CATGUT. Tanton frees catgut of grease by rubbing with a pad soaked in ligroine and then places it, wrapped in single layers around glass, in ligroine for 20 days. Exposure to the air for 24 hours evaporates the ligroine. The catgut is then placed in a 2 percent solution of iodin in acetone, in hermetically sealed, sterilized yellow flasks, for one month, being kept in a dark place. The rolls are then transferred to 90 percent alcohol for storage until required. Before it is placed in alcohol the catgut is brittle but the spirit soon restores flexibility.

The Georgia Practician.—Interstate reciprocity of medical licensure. The inconvenience and injustice of the present methods have long been felt. The American Medical Association has apparently done little toward furthering State cooperation. The Council on Medical Education believes the solution lies in uniform requirements for entrance to medical colleges, for graduation and for State board examinations. This would establish grounds for reciprocity but there is great doubt that the plan will work. The whole matter rests with the various States and if they choose to reciprocate they can do so without the aid of the Council. Through the efforts of the American Confederation of Reciprocating and Licensing Boards, 21 States are now endorsing each other's licenses, very much better than none at all.—Preliminary education of the medical student. Complete reciprocity can come only with a definite standard of medical curriculum, especially of entrance requirements. What should the latter include? A college education is not only an extreme criterion but also a defective one in many cases. The dry rot exacted of students in the average college examination does not make the hand of the surgeon any steadier, the head of the diagnostician any clearer. Genius is hampered by the rigid formulas of the schools. The student who has enjoyed the educational advantages of a standard high school with a curriculum embracing thorough training in physics and chemistry and Latin; who has really been taught to speak, read, and write English; who has a reading knowledge of French and German; and who has been encouraged to observe for himself, has an entirely adequate equipment to begin the study of medicine, and will make a capable physician, however defective he may be as a person of culture.—The Virginia State colony for epileptics. A very timely and encouraging act of the Virginia Legislature was the recent passage of a bill providing for a colony for epileptics near Lynchburg. Georgia should realize that her duties are beyond mere policing these unfortunates, which have been estimated as 1 to every 500 of population. Epileptics must be given State attention.

Medical Times.—Prospects of the medical graduate. From 1882 to 1902 there has been an increase of 100 percent in matriculates. Abroad, especially in France and Germany, there is a yearly decrease in students. In addition to the overcrowding of the profession there is strong talk of increasing the course to five years. Dr. Marshall, of the University of Pennsylvania, in a report to the provost states that the overworked student now has no time in which to review and digest the facts he has learned; the five years' course, according to him, is necessary and not far distant. But if a fifth year was added each professor would increase his material until probably the five years would be as crowded as the four are now. An important question is whether the present course could not be arranged in such a way as to place nonessentials in the background and thus allow its satisfactory completion in four years. In the average medical school there is not enough cooperation between the various departments. All obsolete work should be eliminated and each professor should know exactly what his colleagues are doing.—Physical education as a part of a college curriculum. Compulsory physical education at the University of Pennsylvania brought out some very enlightening facts. In the first 1,000 men examined, 594 showed marked defects of some kind; 160 had uneven shoulders, 84 lateral curvature of the spine, 209 flattening of the chest, 217 breaking down of the arches of the foot, 12 unprotected hernia, and there were gastrointestinal troubles in 200. Many unexpected conditions in the eye were found by careful routine examination. Much has been neglected in this line as the student who of his own accord uses the gymnasium does not specially need it. The average student must be forced into it as a part of the curriculum.—A national quarantine. The need for the bill which has passed the House is imperative. Federal laws are generally enforced while local and State regulations are often unequal to the emergency. The present plan lacks rapidity of action just when it is needed, although the President can enforce State laws when it becomes necessary. During the first year of the existence of this law a cholera ship landed at an American port before the clumsy powers could be put in motion. The present bill it to restrict yellow fever only. National quarantine should be general and directed against all infections or epidemics that may appear in any section of the country.—Aseptic money. A bill in Congress provides for the franking of dirty or mutilated bills to the United States treasury by any individual or corporation and the redemption in new bills. Visitors to Washington are detected by the dirty bills they carry and paper has been shown to be a good collector of bacteria as compared to coin. There may be an objection to the method named as confining the redemption to one point. A more practical one would be to provide for redemption at 100 banking centers throughout the country. Benedict (Buffalo) suggests the use of aluminum cards the size of a bill as ordinarily folded for a substitute for paper money. Such material would be light and fairly aseptic.

Medical Review of Reviews.—THE HARVARD MEDICAL SCHOOL. The annual report of Harvard University states that in the medical department 267 of the 307 students, or 87 percent, hold college degrees. Compared with this Columbia shows 44.5 percent and Yale only 13.7 percent. The three years' course to the bachelor degree to those who study medicine has not to any great extent been responsible for this showing. The free elective system has gone into force during the past year but the students with an unlimited choice of subjects have generally chosen to continue the work as previously laid down. They have not elected specialties and have shown no desire for laboratory in preference to clinical work. This is taken to mean that they prefer to fit themselves for the general practice of medicine. Postgraduate instruction has become a permanent feature at Harvard and there is a steady increase in those taking the courses thus offered. There was a considerable deficit both last year and this in the finances of the medical department which is in line with previous contention that no school can furnish the required facilities of present day medical students from the fees of those students. Large endowments of our foremost school are a necessity.

Australasian Medical Gazette.—TREATMENT OF INEBRIATES. The government of New South Wales expended $50,000 on buildings for the treatment of chronic inebriates and drug habitues. The buildings are now idle because of lack of maintenance. Under the existing laws the patients in the institution will be practically in a jail hospital, hence it cannot be used for the treatment of voluntary cases. The institution should be initiated in such a way that the farce of committing a habitual drunkard to a jail instead of to a hospital will be ended. Under present conditions these persons are a burden on the public purse; in hospitals under suitable treatment a certain percentage may be made useful and independent citizens.—WOMEN RESIDENT PHYSICIANS IN PUBLIC HOSPITALS. "Serious objections have been taken by some members of the Conjoint Board against inflicting upon the poor in the hospital the services of a woman doctor, to which they might reasonably object. It was held that to compel a man who was suffering from some genitourinary disease to submit to be treated by a woman was a wrong; hence the hospital directors have drawn up a regulation defining the duties to be performed by a woman resident medical officer, in the event of one being appointed at any time. The result of this regulation will be to place a woman resident on a separate footing from a male resident, and so to some extent interfere with the regular work of the hospital, since under the old system any of the medical officers may be called upon to attend any class of patient."

Medical Press and Circular.—DANGER SIGNAL FOR THE DEAF. Motor cars and cycles are making almost indispensable some visible and outward sign of deafness lest the victims of this infirmity be injured by drivers who regard their warning as being heard by every pedestrian who is in their path. In case of injury to such the chauffeur cannot be held entirely to blame. The propriety of deaf persons adopting some significant mark of their condition is suggested.—DUSTY THROATS. The multiplication of motor vehicles raises the question of disposal of the dust raised thereby in dry weather. We hear of epidemics of sore throat due partly to the dust itself, partly to the accompanying germs. Doubtless many experiments will have to be undertaken before a solution of the difficulty will be secured. A form of tar treatment of roads has been fairly successful in some instances.—PHRENOLOGY. As a curious survival of the unfit the "science" of phrenology still exists and possesses a society. Its president last week gave an address on "Bumps and their Meaning," in which he maintained that the salvation of our national mentality lies in the study of phrenology. With the development of neurology and the elucidation of the function of various cerebral areas it is curious that the myths about bumps and their significance should not have disappeared.

The Physician and Surgeon.—BALDNESS ASCRIBED TO IMPROPER BREATHING. Parker, of Detroit, contends that air retained in pulmonary alveoli which are not used in the process of respiration, develops in the presence of warmth and moisture a poison termed trichotoxin. This passes into the circulation and affects the hair by actual toxic action and by the deposition of dandruff. The poison has been produced artificially and when dry closely resembles, microscopically, uric acid. An insoluble and a soluble product was isolated. The injection of the former into animals resulted in loss of hair, while the use of the latter produced dandruff only, giving rise to the term stearotoxin. The upper ribs rise and fall with each respiratory act when the entire lung is being utilized in respiration; in bald people this movement never occurs.

Disinfection against tuberculosis has been entered upon by the local Government Board of Scotland.

NEWS AND NOTES.

Plague in California.—Dr. N. K. Foster, secretary of the State Board of Health, reports that there is no doubt of the diagnosis of the case of bubonic plague recently discovered at Oakland, Cal.

For San Francisco Doctors.—The New York County Medical society and the New York Academy of Medicine are trying to raise a fund of $50,000 to relieve the needs of physicians whose property was destroyed in the recent disaster.

Self-inoculation of Sleeping-sickness.—Lieutenant Tullock, of the Royal Society's commission to investigate sleeping-sickness, has contracted the disease through a slight injury while dissecting an infected rat. He has been sent to England, and it is feared cannot recover.

Pennsylvania to Fight Mosquitos.—Health Commissioner Dixon has employed an expert entomologist to map out all the malaria districts giving the conditions aiding in the propagation of *Anopheles maculipennis*. It is hoped that communities will individually take up the work of extermination.

Typhoid Fever Spreads Near Pittsburg.—The epidemic which has been prevalent so long at Pittsburg, Pa., seems to be spreading in the surrounding municipalities, particularly in towns along the Ohio river. Instructions have been issued by local Boards of Health to use no water from the Ohio river unless it has been boiled.

Chicago's Reduced Mortality Rate.—Statistics show a marked reduction in the mortality rate in Bright's disease, cancer, consumption, bronchitis, and typhoid fever. There is also a reduction in the number of cases of infectious diseases, although the mortality from these shows an increase, especially in diphtheria and scarlatina.

Leprosy Germ in Insects.—Dr. W. J. Goodhue, medical superintendent of the leper settlement at Molokai, Hawaii, who has devoted many years to the study of leprosy, clinically, bacteriologically and chemically, has discovered the germ of leprosy in the mosquito and the bedbug. The discovery is mentioned in the paper by Dr. E. S. Goodhue on page 83.

Plague in India has increased rapidly in nearly every province during the past month. The province of Bengal has been reporting 5,000 deaths a week and Calcutta had 40 deaths in one day in March. Bombay has 150 deaths every day. Matters are equally bad in the central provinces, in spite of the efforts to crush the disease by segregation, inoculation, etc.

Isolation of Measles.—It is an anomaly of hospital service in Canada that while there is accommodation for serious diseases, such as scarlatina and small-pox, there is no place where a case of measles or chicken-pox will be received. A family which recently reached Toronto from England, were found on arrival to be suffering from measles. Neither the Isolation Hospital nor the general hospitals would admit them.

The New York Patent Medicine Bill.—The State patent medicine bill introduced by Senator Stevens, which provides for the proper labeling of medicinal preparations containing alcohol or narcotic or other potent drugs, and for their inspection, analysis, and regulation of manufacture, has passed the Senate. There was some opposition, on the ground that it was in favor of the medical profession and discriminated against druggists.

Antitoxin in New Jersey.—The Monmouth County, (N. J.) Retail Druggists' Association recently protested by resolution against the establishment of a state laboratory for the manufacture of antitoxins. They alleged that it would cost at least $100,000 to erect and equip the laboratory, and $20,000 a year to maintain it, while a well-known manufacturing firm offers to supply all the antitoxin the state may need for $3500 a year.

Milk Exhibit in Baltimore.—This was held May 7–14 as the culmination of the course of lectures recently delivered on the same subject. The board called to its aid many other boards and societies, and demonstrated chemistry, pathology and bacteriology statistics; morbific, infectious and anomalous milk; medical milk commissions and milk dispensaries; modified milk; model dairies; dairy utensils and dairy rations; sophistications and adulterations of milk; manufactured milks and milk foods; etc.

Association of American Physicians.—The officers for the ensuing year are: President, F. P. Kinnicutt; Vice-President, James Tyson; Secretary, Henry Hun; Treasurer. J. P. C. Griffith; Recorder, S. Solis Cohen; Member of Council, L. F. Barker. Active members elected are: W. M. L. Coplin, Philadelphia; S. W. Lambert, New York; G. H. Weaver, Chicago Associate members elected are: A. A. Eshner, Philadelphia; R. G. Freeman, New York; I. P. Lyon, Buffalo; M. J. Rosenau, Washington; J. S. Billings, Jr., New York; E. R. Baldwin, Saranac Lake; H. C. Moflffitt, San Francisco. A committee of nine was appointed to aid in collecting books to reform a library for the physicians of San Francisco.

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The Presidency of the American Medical Association may in the past have been an honor or it may not have been. When a disinterested observer has watched the play of a seeker after the office—the long "still hunt," the "pipe-laying," and the cunning strategy employed (the game is still going on)—he is inclined to be ironical as regards the genuineness of the honor. But beyond question both the seekers and the givers hold it to be veritably honorable, and so, of course, it should be. As in every other public position it all depends upon the motive of the man who covets it or has it put upon him. If egotism, self-seeking, the desire for success, is at the bottom of the matter there is disappointment for the profession, which hastens to cover by forgetfulness the bitter of its mistake. And then, perhaps, repeat the blunder in a year or two! The inevitable result is that the official tends to become a sort of figure-head; the possessor occupies the attention for a brief day or two, the kite-tail to the name useful thereafter only in the captions of journal articles, and the title pages of textbooks. But in after years when one asks as to the real result of labors of some of the incumbents he may find that the hour of kingship was utilized in little more than a march, not always dignified in itself, across the stage, while professional organization, progress, and science were not advanced a step. It is fortunate that this has not always been the result.

Surgery and Internal Medicine.—When the American Medical Association was organized and for nearly a generation thereafter there were only two specialties in medical practice, internal medicine and surgery, and there were a score or two of general practitioners to one surgeon. This fact did not prevent the surgeons from getting the presidential office a good half of the time, and they have not been less successful up to the present time. Indeed since 1890 they have secured the prize 12 or 13 times while the poor general practitioners have been allowed a representative only 3 times, a glaring evidence of the reversal of true judgment and an amazing demonstration of—well, of much! General medicine is surely 75 percent more important than surgery by any judicial estimate, either from the professional or the lay point of view. In the distribution of honors, and in the resultant opinion of the patient-world the profession should be more careful not to teach such topsy-turveyism. However necessary surgery may be, however much all of us may honor it, it is after all, the despair of medicine. The patient is handed over to the surgeon only when general medicine has failed to bring about cure; our real duty is to cure by medical or physiologic methods, not to confess that we have done all we can and have failed. Prevention and therapeutics must finally make surgery largely unnecessary.

Specialists, Honored and Unhonored.—If we class the gynecologists as surgeons and the obstetricians with the general practitioners, there have been, since the organization of the American Medical Association 29 surgeons and 29 general practitioners chosen as presidents. There is plainly something more than accident in the careful exactness of these figures. Leastwise it cannot be claimed that the accident of the appearance of men of exceptional ability in either class has been the controling factor. In the earlier days the general practitioner was the favorite, but nowadays it is much the other way. But in all these years the surgeon and the physician proper have become specialists as much as the neurologist, the orthopedist, the laryngologist, or the ophthalmologist, etc. One by one these latter classes have arisen and have been allowed to join, their sections have been organized, their dues have been paid, etc.; they are welcomed by the two older types of specialist, their votes are solicited, they may even be present at the honorings of their elder and greater brethren—but that is all. He would be a brave member who would suggest that these younger adherents represent medical progress and strength, at least to the degree that they shall do so officially. The present President of the British Medical Association is a specialist, and if he speaks wisely he will emphasize the truth of Esop's fable of "The Belly and its Members." They would be most foolish that would urge sectarian issues, but less so than they who are blind to the progress due to specialism, and the pressing need to unite in a common body all branches of medical practice.

The Packing House Horrors.—Too much attention may be paid to matters of fraud to the more or less exclusion of the sanitary side. It is wrong to sell goats for sheep, but not unwholesome. The revelations of the disgusting filth of the operations, of the use of the meat of diseased animals, and of the "embalming" of decayed carcasses, are enough to send the guilty managers to prison. These are the things that require the united condemnation of the medical profession. The public can be protected by appropriate inspection and supervision. The present law applies to meats for export, and is merely commercial—designed to overcome foreign agrarian opposition to the importation of American meats. We Americans have no protection at all, and no one is sure of what he is eating if it comes from Chicago. After reading the accounts of the way sausage is made, it is a reckless man who can ever again eat it.

The military importance of canned meats was thoroughly explained after the Cuban campaigns. General Miles directed attention to such dreadful conditions as the discovery of maggots in the meats supplied, and he was thoroughly punished for his temerity. It is said that one chemist was then paid $70,000 to testify that there was no harm in the trade practices. One packing house, it is reported, paid one million dollars to clear its skirts at that time. We are now reaping the benefits of the white-washing then indulged in. What the regular soldier has received since then does not count, but now that the public is shown to have been subjected to wholesale poisoning, the shoe is on the sore foot. The young men of the country are now aware that if they must fight for this nation in the next war, they are liable to be made ill or be killed by preserved meats fit only for fertilizers. A campaign may fail and the nation itself be disrupted. More than one military expedition has ended in defeat because of the unwholesome foods supplied by army contractors. The system has now struck the public itself and we are at last brought to a full realization of what it means to be dependent upon foods supplied by men who have no check upon their cupidity. Self-preservation demands that the whole business be placed under government supervision or control.

Tuberculous employes in the packing houses come in for more comment also, not only from the ordinary spread of infections, but from the accusations that they actually expectorate into the meats they work upon. This is so revolting a charge that public decency demands a full and impartial investigation. It is a fearful thought that the meat supply of this country is handled by syphilitics and worse. Indeed it is stated that certain branches of this industry are noted for the special diseases they inflict upon the employes. There is then a further necessity—the physical examination of employes, to exclude such as are injurious to the public health. Conditions which make them sick must of course be remedied, so that their horribly unsanitary surroundings, in and out of the yards, must be corrected.

"State's Rights" and the People's Rights.—State's rights cannot be carried to the extent of injuring other States, and if Illinois, in order to grow rich, has failed to correct these terrible conditions, then the rest of us must step in and compel her to be decent. Modern civilization has crowded us into masses in which we are dependent upon each other, and as we cannot abolish the great packing industries, we must control them. This is not socialism; it is merely self preservation. The sooner Congress acts the better. It has a precedent, for a similar wave of horror passed over the English nation some years ago, when they first learned of the awful conditions in London bakeries which are now under the control of health authorities. Perhaps a national Board of Health is needed and a cabinet officer also. Surely the army must make its own foods or properly supervise their manufacture. A century ago, every man could look after his own food supply, but now it is utterly impossible, and the functions of government are necessarily enlarged to do it for us. We cannot trust the dealers any longer.

State Board of Health Advice to the People.—State Boards of Health find their greatest usefulness, both from a physical and a financial standpoint, in the prevention of disease. Efforts with this object in view may assume many different forms and must always include legislative enactments with which to coerce those who are not amenable to other types of argument. A very great field is the education of the people, for upon them finally rests the burden of prophylaxis. Not all educational efforts can be so heartily commended as the third revised edition of a pamphlet on "Infant Feeding" issued by the Illinois State Board of Health. It contains 27 closely printed pages filled with terse directions for the care of babies, particularly during the first year. Breast and artificial feeding in all their aspects, including the care and modification of cow's milk, and the general care of the baby, are discussed in the shape of plain rules that mothers can easily understand. A feature is the absence of "don'ts" and a corresponding predominance of directions for doing things. The use of soothing syrups is properly and strongly denounced. Two pages of suggestions to dairy-men and milk dealers and the formulas for four standard disinfectants are inserted. Secretary Egan has issued a pamphlet that may well serve as a model for other states which are not doing their full duty in helping the people avoid disease. The *Chicago Examiner* is aiding the distribution of the pamphlets by paying the postage on all that are requested through its office, an example of humanely directed newspaper enterprise.

The warm bath in hot weather deserves more attention than is generally given to it. Wintermitz, in a discussion of the therapy of cold baths, directs attention to the fact that cold produces heat. The sudden application of cold to the skin stimulates the heat centers to greater activity and at the same time causes a redistribution of the surface blood. This tonic effect spreads to the whole nervous system and shows the greatest benefit in typhoid fever, though here the prolonged immersion extracts the excess heat. In all torpid conditions the quickly administered cold application serves a very valuable end, even at the extremes of life. It is different in the nerve exhaustions of hot weather, where we aim to soothe and not to stimulate. The English long ago found in India that those who bathed in tepid water were in better condition and stood the climate longer than those who used cold. The morning plunge may be all right in England, as it stimulates the heat production needed for life in their cold houses, but in India the extra heat thus produced may have been a factor in the universal nerve exhaustion. Those who take numerous cold baths in summer are merely thereby adding to the draught of the furnace and producing more heat to bother and exhaust them.

Syphilis of monkeys has been experimentally produced for a long time, but Neisser's work in the Dutch East Indies is of a practical nature. He found that the virulence of syphilitic material had vanished by the sixth or seventh hour after it was taken from the patient—a fact which we had always presumed *a priori*. The germ is a true parasite which cannot exist out of the body. To be transmitted from man to man actual contact is as a rule required. If a medium carries it, the interval must be short, as *e.g.*, when several use the same spoon at a meal, or smoke the same pipe handed from mouth to mouth. The disease is therefore mostly contracted in sexual congress. A syphilitic may infect the cup, glass, fork and napkin at a hotel, but these are sterile before the next meal—mere scalding may have been sufficient. If this were not so, almost all of us would contract the disease. The cadaver is said to be incapable of spreading the disease 18 hours after death. The experiments show the failure of every attempt to arrest the disease by excising the focus of infection a few hours after inoculation. Even early mercurialization failed. The old teaching that it is useless to excise a chancre is thus experimentally confirmed—the germs are already widely disseminated throughout the system, and will only slowly yield to mercury.

Special schools for the talented are the latest suggestions from Germany. When American colleges were first organized it was presumed that all boys should be given the same instruction. It soon dawned upon educators that no two boys were exactly alike and that the differences were occasionally so marked that some of the best minds received but little benefit. Men of literary ability spent valuable time on mathematics which they never could understand, while engineering geniuses wasted nerve-exhausting years vainly trying to learn classic literature. Hence brilliant men who subsequently became famous not infrequently gave the impression in college days that they were stupid failures. Very early this bad system was changed so as to grade the training according to the brain to be trained at present. No matter what the mental variation with which a boy is congenitally blessed or cursed, it is possible for him to be properly trained in one of the hundreds of courses now available. It comes then as a matter of considerable surprise, that there should be any agitation for the establishment of special schools for exceptionally gifted students—to care for the neglected genius whose labor if properly directed might be of inestimable value to civilization.

The Forcing Process in America.—It is doubtful whether such special institutions are needed in America, where specialization is already carried to such an extreme as to worry the conservatives. In addition, the great danger is one to which the medical profession must call emphatic attention. The proposed plan is in the direction of selecting the brightest students from a number of schools and putting them through a process which can best be expressed as "forcing." As such exceptionally bright boys generally show a more or less neurotic condition, it is evident that they are the very ones who should not be forced. They need repression more often. Should the new proposals be carried out, it is not at all unlikely that Germany will find herself loaded down in time with some highly educated neurasthenics, whose working power is at a minimum. Instead of being beneficial to civilization it is quite possible that it will be detrimental.

College-bred vagabonds occupy considerable space in all discussions of the unemployed, but rarely, if ever, is the pathologic side of the matter even touched upon. The Bowery branch of the New York Y. M. C. A., gives assistance to many derelicts in the course of the year. It is said that of the last 3228 helped 17 were graduated from universities, 134 from colleges, 71 from academies, and 417 from high schools, a total of 639. The usual proportion is about one-fourth. This is a horrible condition of affairs and the cause must be discovered. These are sick men unable to work—suffering from neurasthenia, generally, on which is grafted an alcohol or drug habit to increase the basic disease. Is this dreadful blot chargeable to the educators or physicians? Perhaps a few were unfit subjects for education and should never have been sent to schools higher than the eighth grade. If so, some way should be found of discovering such cases, and preventing this waste of money, and lives. Perhaps some of them were injured by the exhaustions of excesses of some sort—athletics or even the "grind" of much study and insufficient sleep. Most are probably sufferers from eyestrain. The learning possessed by some of them proves that they must have been ideal students in the eyes of the teachers. A few are said to be full of classical knowledge of no earthly use to them—splendid Greek scholars begging for bread. The worst of all, is the fact that three-fourths of the men aided—including the uneducated—are native-born Americans and only one-fourth foreigners. Inability of the body in some direction or other to respond to the increased demands, the hurry and rush of our modern civilization is at fault in most cases, but there should be definite knowledge as to what causes these neurasthenias in the native born.

Heart failure as a result of deficient food has been described by Alexander Haig, of London. It is designed to counteract the possible harm that might arise from the teaching that we eat too much nitrogen. Haig flatly declares this theory erroneous, and asserts that nine grains of albumin a day for each pound of body-weight is a rough guide from which we cannot depart markedly without serious exhaustion, even though the body-weight be not diminished. He shows that the heart and brain are the last organs to show damage, because in nitrogen starvation they are fed from the disintegration of the rest of the body. In time they fail too, though it may be months or years after the improper dietary was adopted. Cases reported show how patients were restored by proper diet of a generous supply of albumin. He also mentions the wellknown neurasthenia of the underfed lower classes and shows that their lack of nutrition actually renders them unfit to work and often forces them into the pauper class; they have literally as well as figuratively "lost heart." It is said that ten million Americans are chronically so poor as to be underfed. This is perhaps exaggeration, but as to the poor it is extreme to talk of overfeeding.

The undersized heart is insisted upon by Woods Hutchinson[1] as the primal factor in the development of tuberculosis. Both Bodington and Brehmers, the pioneers of modern phthisiotherapy, lay stress upon the undersized heart. Not only small hearts, but small arteries and small vessels were considered by them to be etiologic factors. And their position was a thoroughly scientific one, for a body illy equipped as regards its circulation must needs suffer for want of oxygen; and such a body must surely become an inviting soil for the growth and propagation of bacilli. Brehmer in his therapeusis took the small heart into consideration; for he sought to develop and strengthen this organ by requiring his patients to take carefully graded walks among the Gaerbendorf hills. It is said indeed that he established his sanatorium in this place because the country about was adapted by nature to this phase of his treatment. Except to note that the small heart is exceedingly difficult of diagnosis most phthisiologists have since agreed with these two great men. Hutchinson however seems to go to the extent of declaring that in consumption we should consider the heart alone and pay little or no attention to the lungs. It is an unscientific procedure with regard to any disease to treat one organ and ignore the rest. Emphasis should be laid upon the circulation without additional advice to disregard other well established procedures.

The consumptive type has been so variously described that Hutchinson truly says the whole race might well be included in the category. One feature is typical, however—unusual stature; in all giants and very tall men the heart, it seems, is undersized, and the circulatory apparatus undeveloped. Hutchinson declares the rate and quality of the pulse to be the most important single symptom of tuberculosis, both in diagnosis and prognosis. He would have all patients rest who have an afternoon temperature of 100° and over; and he would have his patients exposed constantly to pure, fresh air, giving adequate oxidation. In both these respects he is quite right. He would have "enormous overfeeding." In this he is utterly wrong. The patient should eat generously—every mouthful that can be assimilated, and no more. All food which cannot be metabolized consumes strength and lessens health instead of increasing either.

The Automobile as a Disease Producer.—There is a steady and growing conviction in the minds of physicians that, directly or indirectly, dust is a highly important factor in the production of disease. Not only are germs of many of the infectious diseases thus carried into the air-passages, but the mere presence of non-infectious dust, "clean dirt," causes disease. Many articles have been written on the subject and there is no doubt that the mortality and morbidity tables are decidedly affected by the variations in the quantity of dust in the atmosphere. Now for a dust-raiser there is nothing equal to a touring automobile on the country road. A hundred carriages or wagons cannot rival it. The great numbers of the machines, their enormous weight, the huge rubber tires, traveling at a crazy velocity through the country, fill the whole land, night and day, with dust clouds which kill vegetation and cannot fail to be harmful to human health. There should be some remedy for this abuse which, added to all the others, threatens to make the automobile a public nuisance. In England it has already been proposed to apply "the law of nuisance" to the problem. With us the recklessness and brutality of so many automobile owners is to some extent being met by regulations, taxation, fines, etc., but when hygienists become fully conscious of the danger to health and life from the mountain-like dust clouds raised by the automobiles, in which the entire population must live, there should be devised some just and efficient method of abating the nuisance. Would it not be fair to levy such a tax upon the owners of registered machines as would equal the expense of keeping the roads sprinkled and dustless?

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[1] *The Heart in Tuberculosis.* N. Y. Med. Jour. Mch. 3, 1906.

Tropic Neurasthenia.—These cases do not differ from those found further north, but are called tropic simply because they are exceptionally common among northern people residing in the tropics—a fact noted by Dana in his work on nervous diseases. King (*Jour. Am. Med. Assoc.*, May 19, 1906) states that it is prevalent in Porto Rico, and army medical officers have reported similar conditions in the Philippines. This of course means that there are greater causes for exhaustion than at home, and a search has been made for these causes. Unfortunately King does not touch upon the main cause—the lack of adjustment to the climate. Modern anthropology is proving that all the differences between races of man, are designed for a purpose—either to resist dangers or aid in the struggle for existence. Hence a marked change of climate is more or less harmful because the migrant has not the beneficial physical characters of the native. Neurasthenia is the result of this lack of fitness—an index of the damage done—and it should be the most marked in those who most differ from the native. Hence the physique of patients should be reported, whether tall or short, blond or brunet, etc. Each type of man in America is probably prone to contract certain diseases which are less prevalent among other types, and it is more evident still, that tropical reports will show that certain types of Europeans are more liable to disease than others. Exact data on these points are needed, to help in selecting proper men for work in Panama and our other possessions.

Nurses and Hospital Apparatus in Relation to the Healing of Wounds.—Modern methods of antisepsis and asepsis have greatly lowered the incidence of infected wounds in hospital practice but in this respect there is still something to be desired. A discreditable percentage of wounds become infected despite the most thorough disinfection of hands, with or without the wearing of gloves, by the surgeon and his assistants, and careful technic in the operating room. Dr. Charles P. Noble, in a recent address before the Philadelphia Academy of Surgery, called attention to the observance of some rules of practice which in his experience have materially lessened wound infections. The principal points emphasized were two, first, the technic employed by nurses when caring for patients in the wards and in preparing themselves for assisting at operations, and second, the condition of hospital apparatus to which but little attention commonly is paid. After careful investigation of what was being done in respect to the first point, Dr. Noble, after some years trial and perfection, laid down for the guidance of the nurses exact rules of technic the details of which cannot here be enumerated. Suffice it to say that very satisfactory results have accrued from the routine thus adopted. As regards commonly neglected hospital apparatus, everything in the way of instruments and utensils used in the wards are sterilized at prescribed times. For instance, the bedpans, urinals, dressing cans, and similar appliances are sterilized each day, facilities for so doing having been arranged in the bathroom of each ward. The results indicate that at least two common sources of wound infection are as a rule too much neglected by hospital surgeons. Dr. Noble fortunately is in sole charge of the hospital in which he has instituted this advanced technic and, as brought out in the discussion of his paper, this is a most important point, as anything like a uniform regard for the details mentioned is practically impossible in institutions where surgeons change every two, three, or four months. But even in large hospitals with a constantly changing service, the features elaborated by Dr. Noble are well worthy the attention of the surgical staff.

Physicians and the Red Cross as Supporters of Irregular Nursing Schools.—A subscriber sends us a letter addressed to him as "Dear Friend" by a "Short Course" Nursing School which claims to "represent the order of the International Red Cross." The letter of our subscriber asks if we "do not think the whole thing a fake." The letter of the secretary of the "School for Nurses" solicits the help of our correspondent in securing students,—that is, while regular schools which give thorough instruction have long waiting lists, this Red Cross representative must "drum up" trade. It is evident that there is profit in the drumming. Inquiry yields the information that for the ten weeks' lectures $42.00 are secured from the students by the school. The "Christian home" consists of boarding-houses recommended. We read:—

"The Two Year Course gives an all round training, with continuous practice in all kinds of nursing among the city poor. This course is entirely free; room, board, uniforms, laundry, text-books. full instruction and all the refinements of a carefully managed Christian home being furnished. The Short Course is very direct and practical one for the natural nurse, for the nurse with some experience, and for anyone who wants the kernel of the whole matter but who cannot spare a long time in training. The capacity of the school is now about four hundred students per year, making it by far the largest school for nurses in the world. Should you know any young woman who may be interested in nursing, if you will kindly forward their names on the inclosed card we will send them full information."

We find the names of six doctors of medicine at the head of the letter, listed with Reverends, Doctors of Divinity, and Honorables. Undoubtedly the militarism of many nursing schools in the past; the condemnation of the students to a disgraceful hospital and training school slavery; the absurdly extreme and illogical courses of study; all coupled with the too frequent commercialism, impertinence, and ineffectiveness of trained nurses, palliates the crime of the support of the quack nursing school. But it is only a palliation not a legitimate excuse. Remedy the old abuse, should be our rule; not replace it by a worse one. The Waltham Model among others shows that it may be remedied.

Antivaccination in Canada.—After a lengthy campaign the antivaccinationists have succeeded in having compulsory vaccination done away with in the public schools of Toronto; there was no serious opposition on the part of those who favor compulsory vaccination, but it would not be fair to take this fact as an indication of the general opinion in the city on the question of vaccination. Smallpox in Toronto has recently been so mild that the inconvenience resulting from the quarantine has been the worst part of the matter.

BOOK REVIEWS.

Modern Materia Medica and Therapeutics.—By A. A. Stevens, A. M., M. D. Fourth edition, revised. Philadelphia, New York and London: W. B. Saunders & Co., 1905.

The fourth edition of this book has been brought into harmony with the new United States Pharmacopeia. We have so recently reviewed the third edition that nothing need be said concerning its general features. It has the merits of accuracy and conservatism belonging to the previous editions, and the faults inseparable from its attempt to present a large subject dogmatically and briefly. Students, however, will not consider this a fault.

Anatomy, Descriptive and Surgical.—By Henry Gray. New American edition. Thoroughly revised and reedited with additions by J. Chalmers DaCosta. Philadelphia and New York: Lea Brothers and Company, 1905.

The editor of a new edition of such a time-honored and ably edited work as Gray's anatomy confronts no small task. He who embodies in it the latest anatomic knowledge and assembles the whole in a manner easily presented by the teacher, readily grasped by the student, and practically adapted to the working surgeon, has upheld the traditions of the book and has earned the commendation of graduates and undergraduates in medicine. That such is the outcome of Dr. DaCosta's labor as editor we feel no hesitation in saying. The present edition creates a new standard with which future revisions must measure. A detailed review of such a book is not desirable but several points are worthy of mention. The new international nomenclature is given in parenthesis following the names still commonly used in English textbooks; as stated by the editor, this answers the needs of students and will facilitate the transition to the new terms, which is eminently desirable. The special articles on histology and embryology have been omitted, their consideration being wisely deferred to books written by men devoted to those particular subjects. The book is elaborately illustrated, the total number of cuts being 1132, of which approximately 500 are new in this edition; a larger percentage are in colors. The entire work totals 1600 pages, is well printed and is in every way a credit to American surgeons and anatomists.

A Text-Book of the Practice of Medicine.—By James M. Anders, M. D., Ph. D., LL. D. Philadelphia and London: W. B. Saunders & Co., 1905.

In this seventh edition of Anders' Practice the original plan has been retained and, as in the former issues, particular attention bestowed upon inductive diagnosis, differential diagnosis, and treatment. There is little to be said upon the book as a whole, so much having already appeared and all in words of praise for the thoroughness in which the author has done his work, that we can do little more than mention the special features of this edition. Regarding differential diagnosis we notice with much satisfaction that the many diagnostic tables of simulating diseases are retained and amplified. These tabulated points of distinction are of great value to students and practitioners. The new subjects introduced are Rocky Mountain Fever, Examination of Patients for Diagnosis of Diseases of the Stomach, Splanchnoptosis, Cammie Tests is for Glycerose in the Urine, and Myasthendg Gravi. Paragraphs on the following subjects are also added: Pseudotuberculosis, Benign Cirrhosis of the Stomach, Intestinal Lithiasis, Intestinal Calculi, Red Light in Variola, Emulsion-Albuminuria, Sequelæ of Valvular Lesions and Adams-Stokes syndrome. Attention is drawn to tropical diseases now appearing in temperate latitudes. The book will continue to maintain a high position in the esteem of all students of medicine.

Modern English, Book One, Elementary Lessons in English.—By Henry P. Emerson and Ida C. Benden. New York, The Macmillan Company, 1906.

Here is a much needed little book to teach children the use of good English. It is excellently planned and well carried out. Its interest medically, consists in the almost entirely overlooked necessity of making school-books conform to the facts of child psychology and of physiologic optics. For instance, in this book, when the child's mind is naturally interested in the subject, fair-sized type is used, but when an extra effort is required, larger sizes are employed to appeal more surely to the attention and the memory. The makers of textbooks for school children are actually beginning to learn that boys and girls have psychologic and ocular natures, and that pedagogs have corresponding duties.

Clinical Obstetrics.—By Robert Jardine, M.D., (Edin., M. R. C. S. Eng., F. F. P. and S. Glas., F. R. S. Edin.). Rebman Company, New York, 1905.

The second edition of Dr. Jardine's work on clinical obstetrics appears with the addition of much new material and 50 new illustrations. The unusually large experience of Prof. Jardine has well qualified him for writing a book of this kind. He demonstrates the superiority of aseptic to all other methods in the treatment of these patients, and enters a strong plea for greater care in obstetric work. In the treatment of eclampsia he advocates the use of large infusions of normal saline solution, combined with a diuretic (sodium acetate) with the idea of flushing the kidneys freely. He gives full records of 30 cases in which the patients were treated in this way with excellent results. He also reports a fairly large number of cases in connection with cardiac diseases, in order to illustrate, so far as possible, the different lesions. The work is well written and thoroughly up to date. We heartily recommend it to our readers.

An Atlas and Epitome of Diseases of the Skin.

—By Franz Mracek. Authorized translation from the German. Second Edition, revised and enlarged. Edited by Henry W. Stelwagon, M. D., Ph. D. With 77 colored plates by the artists J. Fink and A. Schmitson, and 50 halftone illustrations. Philadelphia and London: W. B. Saunders and Co., 1905.

That a second edition of this atlas has been called for, a distinction seldom conferred upon an atlas, must be regarded as strong proof of its great popularity.

This new edition is even more useful than the first one since important additions have been made to both text and plates. Beside a rearrangement of the text the sections upon some of the more important diseases, such as tuberculosis of the skin and the malignant growths, have been considerably increased, incorporating the advances in our knowledge of these affections since the appearance of the first edition. Twenty-seven new plates have been added, representing for the most part important diseases, some of the old plates being replaced by new and, usually, better ones.

The accuracy and number of the portraits together with the convenient size of the volume make this one of the most useful atlases published; and the careful and discriminating work of the editor has still further increased its value for the American student and practitioner.

Minor and Operative Surgery Including Bandaging.

—By Henry R. Wharton, M.D. Sixth edition. Lea Brothers and Co., Philadelphia and New York.

The fact that this work has reached the sixth edition shows its popularity. The part devoted to bandaging remains about the same as formerly. That relating to minor surgery gives short descriptions of many surgical procedures, such as cystoscopy, skin-grafting, skiagraphy and many others, telling what they are and describing in a very limited way their application. Fractures and dislocations and numerous special operations are described in a very brief manner, yet lengthy enough to give one an idea of what they are. This book should be of value to the beginning medical students and nurses. It is well illustrated and indexed.

A Textbook of the Diseases of the Ear, Nose and Pharynx.

—By D. B. St. John Roosa, M. D., LL. D., and Beaman Douglass, M.D. Macmillan Company, New York.

This title is a slight misnomer as the references made to the nose and throat are only those in which they have a distinct relation in the text to the disease of the ear. To be sure, in the preface, the authors so state their intention but then the preface is not the title. However, the treatment of the disease of the ear is both interesting and exhaustive. The style is simple and clear, making the text very readable. No one part can be brought out in contrast to the others as all the chapters are instructive.

A Manual of Pharmacy for Medical Students.

—By M. F. DeLorme, M. D., Ph. G. The John C. Lindsay Company, New York, 1905.

The aim of this little book is good and its execution fair. The medical student needs to know just about as much of pharmacy as this book tells him. It is arranged to serve as a laboratory guide as well as to be of service in recitation. A note from the publishers states that the typographic and mechanical defects were necessitated by haste in order to allow the book to be used by certain schools that were clamoring for it. This statement explains rather than excuses. In a book of this kind, abbreviations should be avoided and the language should be clearer than it is in many places in the work before us; nor should we come across such an expression as "Bi-Carbonate Soda," which is neither pharmaceutical, chemical nor commercial. We have no doubt, however, that the book will be very useful notwithstanding the minor defects pointed out, and these can readily be corrected in a future edition.

Nasal Sinus Surgery with Operations on Nose and Throat.

—By Beaman Douglass, M. D. F. A. Davis and Co., Philadelphia.

This work is marked by careful attention to anatomic details, simplicity, and excellent illustrations. No one chapter can be selected as being better than another, in fact, the evenness of the entire work is noticeable. The introductory chapter deals with a general anatomic review of the nose. The remaining chapters are devoted to the various operations on the nose, tonsils, adenoids and uvula. The last chapter takes up the subject of laryngotomy and tracheotomy. In each chapter attention is given to the special anatomic details in relation to the topic under consideration. While the various operations on these structures are well described, the author's individuality is shown by his conservative tone in the advocation of some of the procedures.

The Surgical Treatment of Chronic Suppuration of the Middle-ear and Mastoid.

—By Seymour Oppenheimer, M. D. Illustrated. P. Blakiston's Son & Co., Philadelphia.

In the introductory chapter, the author states in a general manner the problems and conditions confronting one in suppuration of the middle-ear. The text is rather full but is excellently illustrated. Careful attention has been given to the anatomy of the parts, both gross and pathologic, particularly to the latter. Diagnosis has received its full share of attention while the surgical treatment of the recent and more radical operative measures, now advocated by many, are well described. The development of the work is logical. The author begins with a description of the simplest pathologic conditions affecting the tympanic cavity and from that up through the various stages of grave pathologic conditions to the complete mastoid operation. This volume is essentially a reference book and as such has value.

Gallstones and their Surgical Treatment.—By B. G. A. Moynihan, M. D., London, F. R. C. S. Second edition. W. B. Saunders & Co., Philadelphia and London.

The appearance of the second edition of this work within a short time of the first edition shows the appreciation of this excellent monograph of the author's, who is a master in this field of work. With the exception of a new chapter on congenital abnormalities of the gallbladder and bile ducts, the edition is practically the same as the previous one. The aforementioned new chapter is both interesting and instructive and is a fitting end to the consideration of the general anatomy of those structures. The book is doubly indexed both as to names of the various authorities referred to and the usual form of index. This adds considerably to its value.

The Ophthalmoscope and How to Use it.—By James Thorington, A. M., M. D. Philadelphia: P. Blakiston's Son & Co., 1906.

By his extensive experience in teaching ophthalmology to both students and general practitioners, Dr. Thorington has become particularly expert in supplying their essential needs. In addition he is the happy possessor of a plain and concise style, that has done much to popularize his previous works on "Retinoscopy" and "Refraction." In his latest book he has considered the whole subject of ophthalmoscopy in a very practical and systematic manner. First are discussed the various forms of the ophthalmoscope, the practical use of the instrument, and the salient optical principles related to it. A careful description of the ophthalmoscopic appearances of the normal ocular fundus is followed by a comparison with the pathologic changes. The different intraocular diseases are considered in a systematic and concise way; those conditions of most importance in daily practice being selected for special illustration and discussion. There are 12 colored sketches made by Miss Washington from cases in the author's practice, and under his personal supervision. In some of the plates several interesting conditions are depicted. In addition more than 70 black and white cuts are used to elucidate properly the text. We cordially recommend the work as a useful guide to the beginner in ophthalmoscopy.

An Atlas of Human Anatomy for Students and Physicians.—By Carl Toldt, M. D., Vienna, assisted by Prof. Alois Dalla Rosa, M. D. Translated from the third German edition and adapted to English and American international terminology. By M. Eden Paul, M. D., Brux. M. R. C. S., L. R. C. P. Sixth Section g—Neurology and h—the Organs of the Special Senses. Rebman and Co., New York and London.

Toldt's Atlas of Anatomy occupies the highest place among the various anatomical works because of its completeness and accuracy. His third German edition is but an advancement upon the two previous ones in its fullness of illustrations and the slight changes necessary due to the progress of anatomic knowledge.

His sixth section dealing with Neurology and the Organs of the Special Senses is no exception. As an introduction the first sixteen illustrations have been devoted to the general histologic structures of the various nerve elements. This is followed by the central nervous system, peripheral nervous system, and the sympathetic system, the special senses dealing with the eye, ear, nose, touch and skin.

It may be said that probably no more complete and accurate atlas dealing with these topics has been published.

The translator and publisher deserve both praise and thanks for bringing this valuable German work within the reach of the American and English students.

The translator has added an Appendix to the volume giving rather full explanation to the differences in nomenclature and the meaning of some of the terms.

Surgical Diagnosis, a Manual for Students and Practitioners.—By Albert A. Berg, M. D. Lea Brothers and Co., New York and Philadelphia.

The author has brought forth a practical treatise on this subject. It is essentially a work for the medical student, also for those practitioners not specializing along surgical lines, who may at times wish a brief and yet clear description of such topics. The best section of the work is Part 5, relating to the injuries and diseases of the genitourinary system. The illustrations add considerably to the alue of the work.

The Blues.—By Albert Abrams, A. M., M. D., F. R. M. S. Second edition, enlarged. New York: E. B. Treat and Company, 1905.

In this edition the author has added to the appendix several notes on methods of examination and treatment. The early call for a second edition is evidence of the appreciation accorded the book by the profession.

The Elements of Homœopathic Theory, Materia Medica, Practice and Pharmacy.—By F. A. Boericke and E. P. Anshutz. Philadelphia: Boericke & Tafel, 1905.

This book consists of two parts. The first part is arranged under the heads of, Generalities, Proving Drugs, Dosage and Potency, The Chronic Diseases, Systematology, Homeopathic Books, Homeopathic Medicine, and Vehicles for Dispensing; the second part under the head of Therapeutics, Materia Medica, and Index. It appears to be a clear, concise statement of the essentials of its subjects. We should think that it would prove of great value to the homeopathic student while affording much help to the practitioner of this therapeutic method. To physicians who refuse to be bound by sectarian dogmas, it affords a rapid view of the practice of the present day followers of Hahnemann.

Dose-Book and Manual of Prescription-Writing: With a List of the Official Drugs and Preparations, and Many of the Newer Remedies and their Doses. By E. Q. Thornton, M.D., Ph.G. Third edition, revised and enlarged. Philadelphia, New York and London: W. B. Saunders & Co., 1905.

The book is a good one. It is well arranged, the language is clear, and the information has been brought up to date. The fact that it has gone through three editions, evidences its popularity as well as its usefulness.

The Prevention and Cure of Tuberculosis.—Compiled by Joseph R. Long. H. M. Brinker, Denver, Colorado, 1905.

This little volume contains a collection of articles of a popular character on the subject of tuberculosis. These articles have been selected with special reference to the needs of nonprofessional readers. Some of them were written specially for the general public, others were prepared for physicians, but all may be read with profit by either physician or layman. They are in the highest degree authoritative and may be relied upon as expressing the latest development of professional knowledge and opinion on this important subject. Some of the articles are as follows: Tuberculosis as a Disease of the Masses and How to Combat It, by S. A. Knopf; The Germs of Consumption, by J. H. Huddleston; The Outdoor Treatment of Tuberculosis, by D. A. Willey; The Climatic and Sanatorium Treatment of Consumption, by H. P. Loomis; Favorable and Unfavorable Climates for Tuberculosis, by H. B. Dunham; The Arid Region as a Resort for Consumptives, by R. W. Craig; Denver and Pulmonary Tuberculosis, by W. N. Beggs; The Climate of Southern California with Reference to Pulmonary Tuberculosis, by G. E. Abbott; The Effect of the Climate of the Atlantic Coast on Pulmonary Tuberculosis, by Guy Hinsdale; When Should the Tuberculosis Patient be sent from Home, by C. P. Ambler; Residence Treatment in Unfavorable Climates, by Joseph Eichberg, and The Physician's Paramount Duty to the Patient and Family in Pulmonary Tuberculosis, by C. P. Ambler.

The Physical Examination of Infants and Young Children.—By Theron Wendell Kelmer, M. D. F. A. Davis Company, Philadelphia, 1906.

The physical examination of infants and young children is a subject in which nearly all the textbooks on pediatrics are deficient and it is in the knowledge of this subject that the average practitioner is deficient. We believe that this little volume fills a very important place and that it will be well received by the profession. The author makes no pretense as to outlining physical diagnosis or pathologic conditions of any kind, his only aim being to instruct the student and physician how to examine a baby.

The Diseases of Infancy and Childhood.—By Henry Hoplik, M.D. Second edition. Lea Brothers & Co., New York and Philadelphia, 1906.

The second edition of this work appears revised and enlarged in text and illustrations, bringing the volume abreast of the advances of the past few years. The section on infant-feeding has been remodeled so that it is more practical, those methods being given which can be readily carried out by the practitioner. A more complete account of the physiology and pathology of the newborn is given than is customary in most textbooks, this subject having been dealt with in greater detail than in the former edition. The section treating of the specific infectious diseases has received extensive additions; some of the articles, such as those on typhoid fever and meningitis, having been completely recast. Many new illustrations and charts appear which add much to the value of the text. The work is well arranged and thoroughly up to date. We heartily recommend it to our readers.

Diseases of Metabolism and Nutrition. Part VI.—Drink Restriction.—By Carl von Noorden. New York. E. B. Treat & Co., 1905.

In this monograph, von Noorden furnishes an historic and clinical review of the therapeutic employment of thirst-cures in various diseases of the bloodvessels, heart and kidneys, and in obesity and diabetes insipidus. Investigations of the author on thirsting human subjects, given in detail, show the stomach is relieved of much work, as is also the heart, the body fluids become concentrated, weight is decreased, appetite is reduced, and if restriction is carried very far, destruction of albumin is increased. The therapeutic application of these facts is then considered, it being emphasized that drink restriction is not an indifferent procedure and must not be carried out as a routine in any of the conditions mentioned; under proper restrictions the method is as important as under other conditions the opposite method of flooding the organism with large quantities of fluid is known to be.

A Laboratory Guide in Bacteriology.—By Paul G. Heinemann, Sc. B., Fellow in Bacteriology, University of Chicago. The University of Chicago Press, 1905.

Heinemann's guide is a book of 137 pages interleaved with blanks for additional notes. It is a very concise and systematized set of directions for laboratory workers, especially beginning students. While modeled after the course given in the University of Chicago it may readily be adapted to other institutions. Elaborate blanks for description of cultures have been omitted, wisely we think. The style of the book is conducive to the reading of textbooks upon the subject and thus will stimulate further investigation. The book is a worthy addition to the list of brief laboratory guides in this branch.

A Study in Nursing.—By Miss A. L. Pringle, formerly matron of St. Thomas' Hospital. New York: The Macmillan Company, 1905.

This little book of 98 pages is presented as "the retrospect of an old worker which may be of use as a study to her juniors." It does not aim to teach nursing in detail but gives many general hints which are not usually found in books on nursing. It applies principally to English hospital administration but nurses in any country will find in it much that is helpful.

Dietetics for Nurses.—By Julius Friedenwald and John Ruhrah. Philadelphia and London: W. B. Saunders and Co., 1905.

This book of 339 pages may be regarded as an abbreviated edition of the authors' larger work on dietetics, commented upon favorably in these columns some time since. The material has been put in form appropriate for nurses and also for laymen who care to know more about feeding the sick. The 23 chapters are well arranged, dealing with the chemistry and physiology of digestion, the classes of foods, the various types of patients, and finally the diet appropriate for those suffering from different diseases. Nurses will find the book distinctly helpful and furnishing more information than is usual in works of this sort.

The Ready Reference Handbook of Diseases of the Skin.—By George Thomas Jackson, M.D. Fifth edition, thoroughly revised. Lea Brothers & Co., New York and Philadelphia.

The revision of Dr. Jackson's wellknown Handbook has been thorough, and the addition of considerable new matter, most of it in the shape of new sections devoted to affections not described in former editions, brings it well up to date. We notice that the affection recently described by the French under the name *botryomycosis* is said to be due to the ordinary *Staphylococcus aureus* while *granuloma pyogenicum*, a name proposed by Crocker for the same disease, is said to be due to a specific organism; this is, of course, an oversight. The alphabetic arrangement of subjects is adhered to as in former editions, an arrangement which makes reference to any particular section easy.

We would suggest to the author that the "Dermatological Don'ts" which concludes the section on General Considerations might be left out of the next edition without seriously impairing the value of the book.

Studies from the Rockefeller Institute for Medical Research.—Volume III, 1905.

This volume, which is uniform with the preceding two, contains reprints of 30 pages detailing investigations conducted under the auspices of the Institute. They form a collection that includes some of the most valuable research work of the past year. This publication is a desirable addition for every medical library.

Lectures on Homeopathic Materia Medica.—By James Tyler Kent, A.M., M.D. Boericke & Tafel, Philadelphia, 1905.

The experience of a homeopathic practitioner should not be without value to the scientific physician who desires a broad view of medicine and of the effects that can be produced upon the human body in health and disease by agents of the materia medica. Professor Kent has a clear style, and its apparent uncouthness, as when he says that silver "is full of rending, tearing pain along the course of the nerves especially of the lower extremities," may be ascribed to the author's mastery of the homeopathic idiom rather than to any lack of knowledge of the English idiom. He is also eminently fitted by his official position to stand as an authoritative exponent of the therapeutic doctrines and contemporary practices of his school. To practitioners of homeopathy, the volume should be extremely useful, and others will find it quite interesting. It raises a very serious question in our mind concerning the trustworthiness of the ordinary observer, whether homeopathic or not, in his estimate and report of the influence of drugs over the human body.

BOOKS RECEIVED.

[Prompt acknowledgment of books received will be made in this column, and from time to time critical reviews will be made of those of interest to our readers.]

The Jungle.—By Upton Sinclair. Doubleday, Page & Company, 1906. Price $1. 50.

Uric Acid.—The chemistry, physiology and pathology of uric acid and the physiologically important purin bodies, with a discussion of the metabolism in gout. By Francis H. McCrudden (Harvard). Price paper, $2.50 net. Cloth, $3.00 net. Paul B. Hoeber, New York City.

Transactions of the Luzerne County Medical Society for the year ended December 31, 1905. Volume XIII.

Studies from the Rockfeller Institute for Medical Research. Volume IV., 1905.

Transactions of the American Surgical Association, 1905. Volume XXIII.

The Pathology and Differential Diagnosis of Infectious Diseases of Animals.—By Veranus A. Moore, B.S., M.D., Professor of Comparative Pathology, Bacteriology, and Meat Inspection, New York State Veterinary College, Cornell University, Ithaca, N. Y. With an introduction by Daniel Elmer Salmon, D.V.M., former Chief of the Bureau of Animal Industry, United States Department of Agriculture. Second edition, revised and enlarged. Illustrated. Taylor and Carpenter, Ithaca N. Y., 1906.

Physiologie und Pathologie des Mineralstoffwechsels. von. Dr. Albert Albu, Privatdocent für innere Medizin an der Universitat zu Berlin, und Dr. Carl Neuberg, Privatdocent u. chemischer Assistant am Patholgischen Institut der Universität, Berlin. Julius Springer, Berlin, 1906.

Materia Medica.—Comprising all Organic and Inorganic Drugs which are and have been official in the United States Pharmacopœia, together with important Allied Species and Useful Synthetics. By David M. R. Culbreth, Ph. G., M. D., Professor of Botany, Materia Medica, and Pharmacology in the University of Maryland, Departments of Medicine, Pharmacy, and Dentistry. Fourth edition. Revised to accord with the new U. S. Pharmacopœia, 8th Decennial Revision. Octavo, 976 pages 487 illustrations. Cloth, $4.75, net. Lea Brothers & Co., Philadelphia and New York, 1906.

International Clinics.—Edited by A. O. J. Kelly, A. M., M. D., with the collaboration of, William Osler, John H. Musser, James Stewart. John B. Murphy, A. McPhedran, Thomas M Rotch, John G. Clark, J. W. Ballantyne, James J. Walsh, John Harold, Edmund Landolt, Richard Kretz. Octavo. 300 pages per volume. Illustrated in colors and black and white. Cloth $2.00 per volume; $8.00 per year. Half leather $2.25 per volume; $9.00 per year. Sold by subscription only, in sets of four volumes. Vol. IV., Fifteenth Series, 1906. J. B. Lippincott Company, Philadelphia and London.

A Manual and Atlas of Orthopedic Surgery.—Including the history, etiology, pathology, diagnosis, prognosis, prophylaxis and treatment of deformities,—By James K. Young, Associate in orthopedic surgery, University of Pennsylvania etc. Illustrated with over 700 photographs and line drawings mostly from original sources. P. Blakiston's Son & Company, Philadelphia, 1905. Price, Cloth, $10.00, half-morocco, $12.00.

A Treatise on Diagnostic Methods of Examination.—By Prof. Dr. H. Sahli, of Bern. Edited, with addition by Francis P. Kinnicutt, M. D., Professor of Clinical Medicine, Columbia University, N. Y.; and Nath'l Bowditch Potter, M. D., Visiting Physician to the City Hospital and to the French Hospital; and Consulting Physician to the Manhattan State Hospital, N. Y. Philadelphia and London: W. B. Saunders & Company, 1905. Octavo of 1008 pages, profusely illustrated. Cloth, $6.50 net; Half Morocco, $7.50 net.

Diseases of Children.—By Henry Koplik, M. D., Pediatrist to Mt. Sinai Hospital, Ex-President American Pediatric Society, etc., New York. New (second) edition, revised and enlarged in text and illustrations. Octavo, 868 pages, 184 engravings and 33 plates. Cloth, $5.00; Leather, $6.00, net. Lea Brothers & Co., Philadelphia and New York, 1905.

State Laws Governing Medical Practice.—A condensation of the laws relating to the Practice of Medicine in the United States, with illustrative maps. Compiled and drawn by Arthur J. Cramp, Milwaukee, Wis. Price 25 cents.

The World's Anatomists.—By G. W. H. Kemper, M. D. With 11 illustrations, 9 of which are portraits. P. Blakiston's Son & Company, Philadelphia.

Text-Book of Human Physiology.—Including a section on Physiologic Apparatus. By Albert P. Brubaker, A. M., M. D., Professor of Physiology and Hygiene in the Jefferson Medical College, etc. Second edition, revised and enlarged. With colored plates and 356 illustrations. P. Blakiston's Son & Company, Philadelphia, 1905.

Pharmacology and Therapeutics.—By Reynold Webb Wilcox, M. A., M. D., LL. D., Professor of Medicine at the New York Post-Graduate Medical School, and Attending physician to the Hospital, etc. Sixth edition, based on the fifth edition of White and Wilcox's, Materia Medica and Therapentics. P. Blakiston's Son & Co., Philadelphia, 1905.

Lectures on Tropical Diseases.—Being the Lane Lectures for 1905. Delivered at Cooper Medical College San Francisco, U. S. A. August, 1905. By Sir Patrick Manson, K. C. M. G., M. D., L. D., (Aber.) F. R. C. P. (Lond.), Medical Adviser to the Colonial Office etc., H. L. Keener & Co., Chicago, 1905.

Transactions of the Medical Society of the State of North Carolina.—Fifty-second annual meeting held at Greensboro, N. C., May 23–25, 1905 Edwards & Broughton, Printers, 1905.

A Manual of Bacteriology.—By Herbert U. Williams, M. D., Professor of Pathology and Bacteriology, Medical Department University of Buffalo Revised by B. Meade Bolton, M. D. Expert, Bureau of Animal Industry, Washington, D. C. With 108 illustrations. Fourth edition, revised and enlarged. P. Blakiston's Son & Co., Philadelphia, 1905.

Refraction. Including Muscle Imbalance and the Adjustment of Glasses.—By Royal S. Copeland, A. M., M. D., Professor in the University of Michigan, and Adolph E. Ibershoff, M. D., Instructor in the University of Michigan. 144 pages. Cloth, $1.50, net. Philadelphia. Boericke & Tafel, 1906.

Pharmacology.—The action of Drugs in Health and Disease. By Arthur R. Cushny, M.A., M.D., Aberd., Professor of Pharmacology in the University College, London; formerly Professor of Materia Medica and Tharapeutics in the University of Michigan. In one handsome octavo volume of 752 pages, with 52 illustrations. Cloth $3.75 net. Lea Brothers & Co,. Philadelphia and New York, 1906.

A Text-Book of Human Anatomy.—By Henry Gray, F. R. S., Lecturer on Anatomy at St. George's Hospital, London. Thoroughly revised and largely rewritten by J. Chalmers DaCosta, M. D., Professor of Surgery in Jefferson Medical college, Philadelphia, with the collaboration of a corps of specially trained assistants. New edition revised, enlarged and re-written in One Imperial Octavo Volume of 1600 pages, with 1132 illustrations in black and colors. Price, with illustrations in black and colors, cloth, $6.00, net; full leather, $7.00, net. Price with illustrations in black, cloth, $5.50, net; full leather, $6.50, net. Lea Brothers & Co., Philadelphia and New York, 1905.

CORRESPONDENCE.

THE BOSTON MEETING.

The Largest Association Convention in History.

To the Editor of American Medicine:—From all standpoints, whether of attendance, of interest, of independence of thought, or of enthusiasm, the fifty-seventh annual meeting of the American Medical Association stands as high-water mark. The ancient city had brought its famed hospitality to the utmost limit and had made unprecedented preparations for the reception and entertainment of its guests, and though these in number far exceeded the anticipations of even the most sanguine, in no point were the arrangements lacking.

A distinct advance was made from the standpoint of breadth of view. The freest and fullest discussions were invited without fear of so-called dissension and without the hugger-mugger in the interests of "harmony" so sure to foster bitter though smothered resentments. There is a growing spirit of tolerance, a feeling that honest men may differ as to means or even as to ends without incurring ostracism and that criticism is beneficent therapeusis if rightly taken.

Men and measures are not identical, and either may be essentially right or wrong without affecting the attitude of the other. All can remember when to express a doubt as to the wisdom of a measure was at once construed into an attack upon its sponsor, with the evil result that too often bad measures were adopted because of the recognized probity and personal popularity of those fathering, or that inefficient and evil men astutely sheltered themselves behind good measures, and by confusing issues and diverting attack, brought the result of only partial good instead of the highest attainable. That day seems past.

The attendance on the General Sessions was large at each meeting and apparently not perfunctory, since addresses were closely followed, and there was very little of the restless coming and going which had hitherto made so much of these sessions unintelligible. The platform presented a large array of ex-Presidents of the Association, State dignitaries, and officers of the Association. The appreciative and gracious addresses of Governor Guild and President Eliot of Harvard were remarkably well received. President Mayo's address dwelt particularly upon the solidarity of the profession in America, in its confrontation of ethical, technical, and social problems. Probably the closest attention was given to those portions of the address which dealt with the crusade against secret remedies and socalled "patent medicines," the practice of medicine as a business, and medical education.

"How Progress Comes in Medicine" was the topic of Dr. Frederick C. Shattuck's masterly oration on Medicine. His illustration of the manner in which progress upon some very narrow path might lead to advance along the whole front was happily put. The work of the clinician might be every whit as scientific as that of the laboratory man. The experiments performed by disease for the clinician are on human beings, often of a nature impossible to be artificially produced. The laboratory man can inaugurate, govern and systematize his experiments, but necessarily most of these must be upon the lower animals. There is a real debt of medicine to the underlying truths of the various sects, quackeries, and charlatanries.

"The Nature and Progress of Malignant Disease" was considered by Dr. Joseph D. Bryant of New York in the oration on Surgery, particularly with reference to cancer and modern knowledge of the subject. The general conclusion was reached that, in view of the limitation of knowledge as to the etiology, new and untired methods should be avoided and established operative procedure maintained. Physician and surgeon should join in observation and treatment of the indeterminate cases of cancer with a view to prompt explorative investigation in doubtful cases and avoidance of delay when the character of the disease was once established.

The address on State Medicine was given by Dr. W. H. Sanders of Alabama, the leading Southern State in matters of hygiene, and well sustained the reputation of its author as one of the foremost among the leaders in the section where State Medicine is of so vital importance, both locally and to the country generally.

The receptions were brilliant, magnificent, enormous. They were not marred by the rain which came to hand promptly each evening but were possibly merely restrained within reasonable bounds. The Library and Museum of Fine Arts were crowded the entire evening, members making a point of attending both receptions. Numbers had their first opportunity to view the famous mural paintings by Abbey and Sargent, and, judging from remarks these constituted the event of the meeting to many. The reception to President Mayo and officers of the Association on Wednesday night was attended by over 8,000 persons and the scene with the beautiful gowns of the women, the long slowly moving column of guests going up to be presented, the magnificent rendering of songs by 100 physicians, made an impression long to be remembered by those present.

In the House of Delegates debates were livelier than in former meetings. There was practically the first public voicing of the discontent and criticism smouldering in and out of the Association. The first allusion was made by the retiring President, Dr. L. S. McMurtry, who, in speaking of the discussion on proprietary medicines so eminently in the foreground, disclaimed the existence of a ring or clique, the existence of which has been so frequently alleged by critics and dissenters. The Secretary's report showed that 619 members of the Association had resigned during the past year, but that the membership had nevertheless a net gain of 4,351, and a present total of 23,636. On behalf of the Board of Trustees, Dr. Happel reported a surplus in the treasury of over $236,000. The annual income of the Association is about $275,000, the annual expense about $250,000. Dr. C. A. L. Reed presented the report of the Committee on Legislation, enumerating twelve distinct lines upon which effective work had been done.

Amendments to the Constitution and By-Laws give the Board of Trustees power, by unanimous action, to change the place of meeting at any time prior to four months from the time selected for the meeting and also place full control of arrangements and of exhibits in their hands. Sections of the Association are empowered to elect each a delegate and alternate to serve like those from the Public Services for one year. Commissioned medical officers of the Public Services are permitted to become members of the Association without payment of the usual dues.

The energetic protests of Dr. Henry Waldo Coe, of Portland, Oregon, and Dr. Victor C. Vaughan, of Ann Arbor, Mich., against certain alleged proceedings on the part of the official organizer and the Editor for the Association respectively, were received with attention. These gentlemen were accorded fullest expression by President Mayo, who invited all members with grievances to present them, and by vote of the House, allowed time for the organizer and the Editor to reply. The official organizer contented himself with a general denial of the complaint against himself, and an affirmation of the purity and disinterestedness of his motives and the honesty of his intent. The chief complaint against the Editor of the Journal was that he had denied admission to the Journal of a communication from a member explanatory of an amendment to the Hepburn Pure Food Bill, and that he had in a telegram impugned the honesty of the complainant, with "a threat to expose." The Editor disclaimed any personal animus, stated that the telegram had been written by one of the Trustees, claimed that he was within his right as Editor to exclude matter in his judgment not available, and regretted any personal hurt which might have followed his action.

Dr. Philip Mills Jones offered resolutions endorsing Dr. George H. Simmons and all his work and Dr. J. N. McCormack and his work as official organizer. Dr. Jones then spoke of the sentiment existing with reference to the attitude of the Association or of the State journals toward the independent journals, owned or edited by physicians. All intention to injure these was disclaimed and the House of Delegates was asked to recommend to the support and patronage of the members of the Association such journals as do not receive inethical advertisements.

These matters were probably more generally discussed informally as groups of physicians gathered throughout the meetings than any other proceedings of the convention. There was a general feeling that discussion was but begun instead of ended by the resolutions passed, but that open discussion of all these points could only be beneficial. That principle instead of personal feeling should be the keynote of discussion all agreed, but there was also general agreement that personal hurt should not affect any ultimate result. The resolution with regard to the independent medical journals did not seem to excite any spontaneous burst of gratitude and appreciation, judging from certain free expressions by members of the "Editors' Association." Among the exceptions taken in such informal discussions, a number of points were raised, not with regard to the expressed or overt intent of the Association and State journals, but as to rational deductions and inevitable results. The claim was made that the line on ethicality as yet too closely resembled a Virginia rail-fence to constitute an accurate division and that a straight line through the "zigzags" would lead to some curious results, not all in the favor of the organization journals. It was generally said that logic and ethicality would demand that these organization journals, particularly if they carried on any crusade of reform, should act purely as "organs" of the bodies they represented, and not as mediums for advertising, especially since such advertising must be purely for profit, not for support. Such action would relieve them from somewhat of the

"God and black beetle" attitude, enjoining "Ye must not be as righteous as we were last year, or last week, or yesterday, or as we are today, but as we shall be tomorrow or next year, lest we fall upon ye and rend ye!" The business agents of the organization journals are in no small way responsible for much of the discontent, most of it as yet unexpressed. So long as manufacturers who may be attacked tomorrow are solicited today for their exclusive patronage because they "cannot afford not to appear" in their columns, and the independent journals are depreciated and sneered at by these commercial agents, and their extinction prophesied, no series of resolutions can inspire faith or beget harmony. There seemed a general sentiment of regret that with these powerful bodies constructive methods were not more generally in favor. There was a wise and progressive feeling that reaction would follow sensational attack and that professional dignity was more in accord with help and uplift than with assault. This sentiment was voiced most clearly with reference to pharmacy and manufacturing pharmacist, and chemists. That these are not engaged in their work for money alone was admitted, and it was privately urged that means should be directed more toward enhancing the *kudos* due sincere scientific effort when such existed and toward emphasizing community of interest, than toward chastising faults and reprobating failures.

There is a feeling occasionally expressed that other sections than those on Practice and on Surgery should be more frequently represented in the presidency and, *on dit*, that next year a strong effort will be made to place the honor in the hands of a famous pathologist. Failing his consent to hold the office these "reactionaries" have lightly propounded the seeking of a condidate from among the special sections. That for the future, however.

Among the section meetings perhaps the general interest was greatest in the discussions on tuberculosis and on the army canteen.

Major Woodruff's resolution, that the Section on Hygiene recommend that the Association advocate reinstatement of the canteen was seconded by Dr. Laura A. C. Hughes, who said that her experience as a nurse in the Spanish-American war taught her that the canteen was a necessity and that the only opposition came from outsiders who did not understand the conditions. The resolution was finally tabled since there was a general sentiment against the section going on record as favoring the canteen in so emphatic a manner, although most of those present agreed with Dr. Woodruff in his presentment. In the same section at another session a lively discussion was engendered by a paper attacking antisepsis and styling disinfection a superstition and a fetich.

The anticipated "hot time" came off in the Section on Pharmacology and Therapeutics, precipitated by Dr. M. H. Fussell's paper on "Prescribing versus Dispensing." There were many words and a sharp cleavage of line but results were *nil*. Dr. Robert Abbe's paper in the surgical section with the accompanying exhibition of a quantity of radium drew a large audience and when any of the famous foreign physicians visiting the convention took part in a meeting, a noteworthy increase in attendance was observed.

Boston was most cordial in every way, and none of its famed hauteur was in evidence. Policemen, private citizens, street railway employes, children, all were eager to render every comfort and aid possible to the stranger within their gates. The newspapers gave pages to accounts of the meetings, and all was cooperation and hearty good will. That the Section on Nervous and Mental Diseases was affably styled the necrological section, that one newspaper gravely told its readers the section on stomatology was composed of physicians who made diseases of the stomach their "fad," and that special railroad tickets showed the remarkable collocation of "The American Medical Association and the First Church of Christ, Scientist," merely added to the gaiety of nations and did not disturb the pleasure of the visitors.

With the choice of Dr. Joseph D. Bryant of New York for President and the selection of Atlantic City for the next place of meeting all were satisfied, while a banner registration of 4800 caused much gratification. That Massachusetts physicians, citizens, matrons, and maids by their unprecedented hospitality made the gathering so marvelous a success all conceded, and there is not the slightest doubt but that, an they could, even the weather would have been specially ordered.

It was a great meeting!

Staff Correspondent.

Germans Boast Decrease in Tuberculosis.—The returns furnished by the German Tuberculosis Congress show a decrease of 38 percent in deaths from tuberculosis since 1875. The German insurance companies from 1901 to 1905 spent over $9,000,000, in fighting the disease, establishing 36 sanatoriums. The strict inspection, sanitary enforcement, and the sanatoriums are credited with the happy result.

NATIONAL ASSOCIATION FOR THE STUDY AND PREVENTION OF TUBERCULOSIS.

BY

ALLER G. ELLIS, M. D.,
of Philadelphia.

To the Editor of American Medicine:—The second annual meeting of this association was held in Washington, D. C., May 16–18, 1906, beginning as joint meeting with the Association of American Physicians to hear an address on Immunity in Tuberculosis by Dr. Simon Flexner. The attendance was less than at the first meeting in 1905 but the character of the papers was beyond the standard then attained. There was still too little discussion of methods for extending organized efforts against tuberculosis in the way of popular and professional education regarding the disease and its prevention. Special attention was directed to this function of the association by Dr. Flick.

The report of the secretary showed an increase in membership during the year from 406 to 1,012. Ten State societies are now in correspondence with the national association, eight more have societies well under way, and in six the movement has begun. The attendance at the exhibition meetings held in several of the larger cities during the winter was about 160,000, Philadelphia furnishing more than any other city.

In the absence of President H. M. Biggs, who is recuperating from overwork, Vice-President Flick delivered the annual address, on The Duties, Responsibilities and Opportunities of the National Association. He referred to three particular things accomplished by the association during the past year, namely, bringing to this country the 1908 meeting of the International Congress on Tuberculosis, the establishment of the exhibition meetings before referred to, and the creation of an advisory council. The need of an active educational campaign among the laity, the medical profession, and in the various schools as a part of the work of the association was especially emphasized. In his opinion there should be established a press bureau, to furnish accurate information regarding tuberculosis to the press which is now ready to aid in the campaign against it. A lecture bureau could also be made a valuable adjunct to the association. At the close of the address, the members adopted a resolution empowering a committee to consider the advisability of carrying out the suggestions made by Dr. Flick.

The general business of the association was soon transacted. The election of directors brought up a question that provoked lively discussion and for a moment threatened opposition to the suggestion of the executive committee. The number of directors has been increased to 60 and with the expiring terms of some, 30 were to be elected. The names of 30 persons selected by the committee and the board of directors were presented with the suggestion that they be elected. Objection was raised to this "cut-and-dried" method of election and other candidates were nominated. The matter was finally adjusted and the 30 were elected, though not without misgivings on the part of not a few of the members present. The double red cross was adopted as the official emblem of the association.

The scientific work this year was grouped in five sections, two new ones, Surgery, and Tuberculosis in Children, having been added. Many important and timely subjects were discussed. Tuberculosis Nostrums was the title of a characteristic paper by S. H. Adams of New York. He finds cause for encouragement in the fact that the whole matter of nostrum control is under readjustment. Patent medicine bills have been agitated in various States, their passage in several being nearly accomplished. The press of the country is also taking a more commendable stand upon the subject.

Members of the staff of the Phipps Institute, Drs. McCarthy, Ullom, Walsh, Landis and Ravenel, presented a series of studies on tuberculosis of the meninges, the liver, the kidney, the bacteriologic findings in autopsy cases, and the clinical and pathological comparison of cavities. In reporting on the last-named subject, Dr. Landis brought out some very instructive points. Of the 76 cavities found at autopsy, 58 had been recognized clinically. Three the size of a lemon had escaped detection and in 10 cases supposed cavities were not present, consolidation around a bronchus being responsible for the error in 5. One conclusion was that we are not so accurate as we might be in diagnosing conditions in the lung simulating cavities.

Placental tuberculosis is regarded by Dr. A. S. Warthin, who showed lantern slides of three cases, as not being so rare as many have taught. Twenty cases have been reported. In the discussion, Dr. W. H. Welch stated that the evidence is becoming stronger and stronger that conveyance of tuberculosis from the mother to the fetus is far more frequent than formerly was supposed.

The serum diagnosis of tuberculosis has been still further tested by Drs. Kinghorn and Twichell with the finding that it is not a specific sign of the presence of tuberculosis and is of no value in the early diagnosis of the disease. Drs. Baldwin and Price, in further studies upon immunity in tuberculosis, experimented with lymph-node, bone marrow, and leukocyte extracts of immunized animals but failed to secure encouraging results.

The therapeutic use of tuberculin combined with sanatorium treatment of tuberculosis was the subject of an exhaustive report by Dr. Trudeau in which he presented a summary of the impressions gained from its use at Saranac Lake since 1890. He has used it continually in spite of the popular clamor against it. Tuberculin is a powerful agent and must be used with care. Fever reaction is not necessary and every effort should be made to avoid its production, hence very minute doses are to be used in the beginning. Six months are almost always necessary for the treatment and in many cases a year would be better. The danger from tuberculin lies wholly in its faulty administration. At Saranac Lake it was used in addition to the regular routine treatment of all other cases. Figures made as accurate as possible show that among incipient cases, 56 percent treated and 50 percent untreated were apparently cured; in advanced cases the figures were 27 percent and 6 percent respectively. The postdischarge mortality, which may be regarded as a fairer test of the treatment, shows that of the patients discharged during 15 years, 79 percent of the treated and 63 percent of the untreated incipient cases are still living; of the advanced, the figures are 61 percent and 36 percent. As a result of his experience Dr. Trudeau still holds to the opinion formed years ago, namely, that tuberculin aids in the sanatorium treatment of tuberculosis.

Of the newer diagnostic and prognostic measures in tuberculosis, two were discussed. One is the opsonic index of Wright and Douglas. An exhaustive review of this subject by Dr. N. B. Potter shows the determination of the index to be a tedious and difficult procedure but that if not diagnostic it may prove of prognostic value. Further studies are considered advisable. The hematologic findings of Arneth and others, regarding the types of leukocytes, were reviewed by Dr. A. C. Klebs. This method has not been fully worked out but gives promise of being valuable as an aid to prognosis in tuberculosis.

PELVIC MASSAGE.

BY

J. M. BALDY, M.D.,

of Philadelphia.

To the Editor of American Medicine:—In your editorial of March 11 on the paper of Dr. Joseph Taber Johnson, of Washington D. C., describing pelvic massage, you state that "true to a traditional stupidity we are just taking it up" and you appear to fear that pendulum will swing to an extreme degree in the direction of this method of treatment of pelvic displacements and adhesions. You also advise that "civilian gynecologists look to their laurels" as against the military gynecologists as represented by Major Thure Brandt.

In this connection as a civilian gynecologist I wish to say a few things which you will note are in absolute flat-footed opposition to the views of Major Thure Brandt, Dr. Joseph Taber Johnson, and all the long list of quoted authorities on the subject of pelvic massage.

I ask but one thing—that my remarks be thoroughly understood to apply only to *chronic cases*. The acute cases are not worth discussing, because if there is any good to be obtained by the treatment in acute or subacute conditions of inflammation of the female pelvis, the risks are too great to be taken by any but the most expert and I should be loath to add the encouragement of my endorsement to any physician to adopt a method of treatment so dangerous for the purpose of obtaining results which can be obtained with so much greater safety.

As to chronic conditions:—Twenty-five years hence civilian gynecologists will be further from adapting it than they are today. It has been thoroughly tried and the early promises in its behalf have been proved fallacious, as has so often been the case with much vaunted remedies in medicine.

Pelvic massage, it is safe to say, has never cured a single case of pelvic adhesion—has never cured a single adhesion unless it has been practised so roughly as to rupture it.

I do not say that symptoms in some cases have been abated under the treatment but the relief of symptoms temporarily and the cure of disease are very different. It makes little difference what authorities have been quoted or what Brandt claims until the gentlemen can show me the case, allow me to examine it and pass on the condition prior to their treatment by massage, and then allow me again to pass upon it after they are finished with the case. I admit frankly that I can only believe that they deceive themselves. I am absolutely convinced that they, nor no one else, have ever cured by this treatment a single case of chronic adhesion or adherent displacement of the uterus.

Your statement that "every one who has tried the method has relieved all sorts of malpositions, adhesions and exudates which are ordinarily considered irresistible without operations of a serious nature" is far from fact. There are plenty, I may say the vast majority of competent gynecologists also have tried and given up the treatment as a failure—and I am safe in stating that the method has not eliminated a single operation in surgery, nor will it.

Your anxiety in regard to the pendulum is unnecessary; its fluctuation will remain unaltered.

THE MUCK-RAKE IN TUBERCULOSIS.

BY

JOHN SCOREM, M.D.,

Weissnichtwo.

To the Editor of American Medicine:—While the learned professor of pathology and bacteriology is preparing to tell his class that *Bacillus tuberculosis* was discovered 24 years ago, the class is coming up the stairs and covering them and filling every available corner with sputum. The colored janitor begins at the top of the stairs and scrubs downward, and when he gets at the bottom step he begins all over again at the top. Thus a living is provided for the needy. The president of the college is busy making a plea to the wealthy for more bricks and mortar, on the ground that the health of the community is thereby secured and medical education advanced The corner policeman, with his back to the wall, is making around and in front of him beautiful nummular arcs of circles, and the wife of the mayor is dying of tuberculosis. The doctor walks into the drug-store to order a bottle of cod-liver oil for his patient up the street, and incidentally, in passing, expectorates into the circular register in the floor. The members of the Antitubercolosis Society, in going to the place of meeting (those not suffering with myopia), walk in a circuitous manner, to avoid cream-puff sputum on the sidewalk. If it were not for the trailing skirts of the female members and the ordinance for the prevention of spitting on the sidewalks, the average pedestrian would be compelled to wear rubber boots or ride on top of a trolley car.

A member of the Advisory Committee of the Board of Health, between his learned remarks, expectorates under his fellow-member's chair, and votes to disinfect all houses after whooping-cough, and rents a house for his family in which seven persons have died from tuberculosis.

Seven millionaires each gave $10,000 to put up a new wing for the home for tuberculous patients, and the pavement of the City Hall square, over which they walk to their offices, looks as though it had variola.

Three hundred people were killed by an earthquake in San Francisco and untold sympathy was aroused. Twelve hundred people died in Philadelphia in one year from tuberculosis and when it was proposed to stop expectoration on the sidewalks and in public buildings the undertakers sent in a remonstrance to councils.

The Climatological Society met in Las Vegas last summer and took a "one-lung train" to the South-west. Immunity saved their lives.

Tuberculosis is a disease arising from the spontaneous generation of inflammation in the various tissues of the body, in the same way that elephants are occasionally produced from ostrich eggs in South Africa, and if it is ever proved to be caused by a specific entity and preventable, humanity *may* awaken.

Written with respectful apology to the various medical societies, colleges and learned societies in the Quaker city.

THE OTHER SIDE.

BY

A. P. REED, M. D.,

Naples, Maine.

Editor American Medicine:—Apropos of Dr. Balloch's paper on appendicitis in your April number, and referring to what he said relative to the appendix being a *rudimentary* organ *evoluting* itself out of existence, I want to ask if there has been noted in the history of this organ any perceptible diminution of the appendix in support of this theory? Since the appendix is often found quite sizable, sometimes reaching across to the opposite side, it would seem that probably it *averaged* no smaller than it did hundreds of years since and that if it is a part of the evolution process, it is a very small and exceedingly slow part. Again is it not presuming considerably upon the wisdom of "nature's animator" to destroy or annihilate any organ of the body just because its purpose cannot be clearly discerned by us simple mortals? I know how precarious is the ground I am walking on so far as it concerns the city surgeon, but I believe that appendicitis is largely a disease of indiscriminate and inordinate eating and the sequels of the same. including constipation. The fact that a large number of cases occur in males, and that a large percent are in young people, as well as the fact that fecal concretions are so often found in the appendix in the absence of any other apparent cause, all go to substantiate my claim; while the fact that in my own experience of having had numerous cases of what I called and what any surgeon would have called appendicitis, without ever having one come under the surgeon's knife, and without a death, and the other fact that *whenever* I could get the patient to follow my counsel "recurrent" attacks have ceased, go to prove the frequent needlessness of surgical interference. My personal experience tallies with my belief. To relate it here, would be too long a story.

ORIGINAL ARTICLES.

SYPHILIS OF THE STOMACH.[1]

BY

WM. GERRY MORGAN, M. D.,

of Washington, D. C.

While we know that in general an organ in the body may be affected by syphilitic lesions, yet there are some organs that are rarely involved; among these is the stomach. Syphilis of the stomach is rare, but it occurs.

The first cases of syphilis of the stomach on record are two reported by Andral in 1834, one of them having occurred in the practice of his father. Since then scattering cases have been reported, most numerously in the past ten years. The paucity of the literature on the subject is indicated by the fact that in the Index Catalogue to the Library of the Surgeon-General's Office in 1892 there are only six references. The literature for 1903 to 1905 comprises only eight papers, covering about 16 cases. Flexner up to 1898 recognized only 14 authentic cases grounded on clear pathologic findings; but he apparently excluded cases diagnosticated on clinical manifestations alone. These facts indicate the rarity of gastric syphilis, but it is probable that many cases escape recognition.

Some idea of the frequency with which the stomach may present tertiary lesions in cases of syphilis may be gained from the series of 329 autopsies made by Chiari and by Stolper on subjects affected with syphilis, in which four cases of distinct organic gastric syphilis were found, beside many other cases in which the stomach presented morbid conditions of a functional or secondary nature. The distribution of these series between congenital and acquired syphilis was as shown in the accompanying table.

CONGENITAL SYPHILIS.

	Chiari.	Stolper.	Combined.
Total number of cases autopsied	145	25	170
Number of cases of gastric syphilis found	2	0	2
Percentage of cases of gastric syphilis	1.3	0	1.18

ACQUIRED SYPHILIS.

	Chiari.	Stolper.	Combined.
Total cases autopsied	98	61	159
Cases of gastric syphilis	1	1	2
Percentage of cases of gastric syphilis	1.02	1.64	1.26

TOTAL CASES OF SYPHILIS.

	Chiari.	Stolper.	Combined.
Cases autopsied	243	86	329
Cases of gastric syphilis	3	1	4
Percentage of cases of gastric syphilis	1.2	1.16	1.22

These statistics, so far as they go, indicate that the stomach is organically involved in about 1⅓ percent of all cases of syphilis; and that it may be involved in both the congenital and acquired form of the disease, and in about equal proportions.

The stomach may be affected in syphilis in two ways, (a) functionally or secondarily, and (b) organically.

Functional gastric disturbances are common in cases of syphilis in the secondary and tertiary stages as a part of the general systemic disorder. Secondary morbid conditions in the stomach may also set up, as in consequence of lesions in neighboring viscera, especially in the liver. Thus the circulatory disturbance caused by syphilitic cirrhosis of the liver may produce congestion, catarrh, ecchymoses, and erosions of the gastric mucous membrane.

Organic syphilis of the stomach, the condition considered in this paper, occurs in the tertiary stage and with rare exceptions originates as a more or less circumscribed gummatous deposit or infiltration in the stomach wall. The submucosa is usually primarily and chiefly invaded, the process later extending into the other layers. At a later stage the gummatous area may break down and ulcerate. Still later the healing of the ulcer may result in the formation of a new fibrous tissue and cicatrices, with possible contractions and stenoses.

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[1] Read before the Clinico-Pathological Society, March 30, 1906.

In one of Chiari's congenital cases the lesions were not of a gummatous character, but consisted in a diffuse syphilitic inflammatory infiltration of the mucous membrane.

In their clinical manifestations, the cases of gastric syphilis may be divided into four classes, according as their predominant symptoms are of (1) chronic gastritis; (2) ulcer; (3) stenosis; (4) tumor.

Manifestations resembling those of chronic gastritis are presented in many cases of gastric syphilis, either throughout the case or during the period of development of the lesions. There is nothing distinctive about the symptoms, which may consist of dyspeptic conditions, pain and distress, achylia, malnutrition, etc., exactly as in chronic gastritis in general. These symptoms may be protracted over a period of years.

When ulceration develops, the symptoms presented are similar to those of ordinary gastric ulcer: pain, vomiting, hemorrhage, hyperchlorhydria, anemia, malnutrition, etc. Hemorrhage is likely to be excessive, repeated, and prolonged, making some of these cases very grave. Ulcer is probably the most frequent clinical form in which gastric syphilis occurs, or at least is recognized.

When tumors, thickening of the stomach walls, or cicatricial fibrous contractions are so situated as to cause stenosis or closure of the pylorus the usual consequences of obstruction of this opening result, dilation, stagnation, etc.

A considerable proportion of the cases are of the tumor or pseudocancerous type, presenting a course and conditions that may closely resemble those of gastric carcinoma: dyspeptic symptoms, pain, palpable tumor, emaciation, etc. The cachexia is probably not so typically manifested as in the true cancerous cases. The course of the disease may be longer protracted (over a period of several years) in syphilis than in carcinoma, a point which may aid in the diagnosis of the former as against the latter condition.

Cases of gastric syphilis exhibit various grades of severity ranging up to cases of the most serious character in which death may result, as from hemorrhage or malnutrition. If recognized in time, however, the prognosis is good.

In cases of gastric syphilis there may or may not be a history of known or acknowledged antecedent syphilis, and concurrent syphilitic lesions in other organs being absent, the stomach is at the time the only organ affected with tertiary lesions; in others the stomach suffers in company with other organs in a more generalized outbreak of the disease.

From the foregoing considerations, it will appear that there are no characteristic symptoms in gastric syphilis different from those of other similar affections of the stomach to attract the attention to the syphilitic character of the lesions or to enable a definite diagnosis to be made. The decisive diagnostic criterion is the result of antisyphilitic treatment, under the influence of which the gastric symptoms and lesions disappear. The pathologists sometimes are not inclined to recognize the validity of the therapeutic test; even the macroscopic and microscopic appearances of the lesions are not always pathognomonic of syphilis and for practical clinical purposes the disappearance of the morbid conditions as a result of the specific treatment must be regarded as of the highest validity in establishing the diagnosis of syphilis.

As a matter of fact, in a large proportion of the reported cases, the diagnosis of syphilis has been reached in an adventitious or accidental manner. Many of these cases were recognized only at autopsy. In a few cases the appearances presented at operation undertaken for the relief of ulcer or pyloric stenosis first aroused suspicion of the syphilitic nature of the lesions. Some of the cases were regarded as syphilitic on account of incidental disappearance of the gastric symptoms in the course of treatment of syphilitic lesions elsewhere. In some cases antisyphilitic medication was employed as a result of a happy guess, or tried in desperation as a last resource in severe cases that had resisted all other treatment; and the successful results established the diagnosis.

It is exceptional, therefore, for anything in the clinical manifestations of gastric syphilis to attract attention to the nature of the disorder or to suggest to the practitioner's mind the idea of the trial of antisyphilitic treatment. These cases are so common that the diagnosis of syphilis is not likely to occur to the physician, and yet it is essential to the cure of the trouble that a correct diagnosis be made; many of the patients get into a desperate condition and will die if the disease is not correctly recognized and properly treated; and so effective is the treatment that the gravest cases, and patients almost moribund, may sometimes be saved almost as if by a miracle.

It is well, therefore, for the practitioner to bear in mind the possibility of gastric cases being of syphilitic origin and in obscure or intractable cases that resist all other treatment to make a trial of the iodids. Some patients apparently incurable or hopeless will thus be saved. Especially should the iodids be given a trial in cases with a known or wellmarked history of syphilis, or presenting syphilitic lesions elsewhere; and in cases simulating cancer, but extending over a period longer than carcinoma usually continues, syphilis is a strong possibility.

The treatment consists in the vigorous administration of the remedies indicated in tertiary syphilis, iodids with or without mercury. The results often in extremes cases are prompt and marked. Symptoms and lesions that may have lasted for years may clear up in a few weeks, the ulcers heal, obstructive conditions be ameliorated, and the tumors disappear. Even in cases apparently the most desperate, the patients may recover.

I have had one case of gastric syphilis, of the pseudocancerous type, in which the diagnosis rests on the therapeutic result, as follows:

On March 31, 1904, Mr. C. T. consulted me on account of severe gastric symptoms of a progressive nature extending over four years, but which had become worse during the past few months. Following my routine custom I asked him specifically if he had suffered from gonorrhea or syphilis and he denied having had either, declaring that his only illness had been malarial fever four years before, and from which he dates his present illness.

At the time he first came to me he complained of continuous pain in the epigastrium uninfluenced by eating or drinking, but always worse at night. He had no appetite and upon the least exertion was troubled with vertigo. He had a sensation in the stomach as if there was an orange in it, and had aversion to animal food Thirst was annoying all the time. He experienced no difficulty with deglutition. Eructation of odorless gas was continuous. His tongue was coated down the center, the tip and edges clean; fauces in otherwise a healthy condition. Breath was not offensive. He suffered from obstinate constipation and distressing flatulence. He had lost 35 pounds in weight during the past 18 months, and felt extremely weak and ill, and looked so. His flesh was flabby and his skin hung in loose folds.

He was markedly anemic. Physical examination showed the heart and lungs normal. Reflexes normal. Liver not enlarged or tender. Spleen apparently normal. Kidneys not palpable. Abdomen somewhat scaphoid, arches and spines prominent. Epigastrium sensitive but without a circumscribed painful area. Splashing sound could be produced from tip of the ensiform to 1½ inches below the navel. As the abdominal muscles were irritable, the examination was somewhat unsatisfactory. When the stomach was inflated the area of gastric tympany was greatly increased downward. At this time no tumor could be palpated. The swallowing sounds were heard normally.

Chemical analysis of the gastric contents one hour after an Ewald test-breakfast showed the following conditions: Free and combined hydrochloric acid absent, the degree of acidity of 2, the absence of ferments, the absence of blood, bile or tissue; the presence of large amounts of mucus. In a fasting condition some of the food eaten the previous day was washed out of the stomach.

At this time I was uncertain as to whether I had to deal with ischochymia due to a markedly weak musculature (quite a rare condition), to a benign or to a malignant stenosis of the pylorus, but I was much inclined to the latter.

On April 14, the patient returned to my office and I was greatly shocked at his loss in weight and failure in his general condition. At this time, on account of the relaxed and thinned abdominal walls, I could easily palpate a somewhat movable tumor occupying the pyloric region. The dilation of the stomach had increased considerably. I unhesitatingly pronounced his disease to be carcinoma of the pylorus, and as he desired to be told the truth so he could return home to a distant city if he was incurably ill, I advised him to lose no time in arranging his departure. About ten o'clock that night Mrs. S. T. came to my residence and requested a short interview, during which she told me that her husband had that evening told her he had denied to me having suffered with syphilis, but that four years before he had contracted the disease. I asked her to send him in to see me on the following morning. Upon questioning him again he gave a typical history of syphilitic invasion with the usual course. He had had the initial sore upon the glans penis, followed later on by mucous patches in his mouth and later still by syphilitic eruption upon his body. He consulted a physician, who made the correct diagnosis and put him upon a mercurial course of treatment, which he followed a few weeks and then abandoned, because he attributed his digestive disturbances to the medication being given him for the relief of the syphilis.

After hearing from him this syphilitic history I told him that there was a reasonable probability that the tumor was a gumma and if such was the case he had a fair chance of being relieved of his stomach trouble.

I prescribed a saturated solution of potassium iodid in increasing doses. I did not again see him until April 29. The change in the patient was nothing short of marvelous, he had gained more than ten pounds in weight, his pain and other gastric symptoms had disappeared. His appetite had returned and his tongue had cleaned off. He continued the iodid in varying doses for some months and continued to gain in weight and strength. The last time I saw him he was, so far as I could ascertain, in perfect health.

THE DIAGNOSIS OF INCIPIENT PULMONARY TUBERCULOSIS.

BY

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of Philadelphia, Pa.

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It would seem superfluous at the present time to read a paper on the diagnosis of incipient pulmonary tuberculosis, were it not for the fact that every physician, who is connected with a sanatorium, or who in the course of his practice sees many tuberculous subjects, is impressed with the fact that an early diagnosis is so rarely made by the general practitioner. It is a lamentable fact that at least eight-tenths of the patients with supposedly incipient cases who are sent to sanatoriums for treatment have advanced cases, many of them hopeless, and that only a small proportion can be considered to have truly incipient lesions. As Trudeau has said: "The average medical man's idea of tuberculosis only relates to the disease after the rational and physical signs have become well marked."

There are several reasons to account for this. Thus, for instance, the physician, though he may have good reason for suspecting the presence of tuberculosis, is too often unwilling to state his suspicion to the patient, although by giving the latter the benefit of the doubt he would be paving the way toward recovery; but he goes on hoping against hope until tubercle bacilli appear in the expectoration, or the physical signs become so pronounced that the veriest tyro could make the diagnosis. Right here, I would like to emphasize the fact that a patient who has begun to spit up tubercle bacilli, the presence of which shows that tissue has begun to break down, can no longer be regarded as having a truly incipient case. Not but that such an individual may get well, and often does get well, but the diagnosis should, in the majority of cases, have been made months before. Hence the persistent cry of the sanatorium physicians throughout the country-"Earlier Diagnosis," "Incipient Cases," a cry which reflects no credit on the profession at large. This state of affairs exists, and persists, simply because the physician is so often unwilling to recognize the facts which stare him in the face. It requires no highly refined knowledge, no abnormally acute hearing, no specialized instruments of precision to make the diagnosis, but it does require care, common sense, and candor, combined with a reasonable familiarity with the methods of physicial examination.

The belief that telling a man that he has tuberculosis is equivalent to pronouncing his death sentence is being, only slowly I regret to say, but nevertheless surely, eradicated. The public no longer shudders at the thought, and the patient's friends no longer speak of it in a whisper, for in almost every community there is at least one individual who stands as a living monument to the efficacy of modern phthisiotherapy—fresh air, hygiene, and diet.

Cough may be entirely absent in incipient cases; and when present it is usually only a slight hack or clearing of the throat. There is perhaps no one truth in connection with this subject that will better bear emphasis than the fact that the diagnosis of incipient tuberculosis cannot as a rule be made on any one particular symptom or sign, but that invariably there must be a due consideration of the whole complex picture. I would especially emphasize the value of getting a careful record of the case both as regards the patient's personal and family history. It will not do merely to inquire if any of his immediate family have died of tuberculosis and be satisfied with a perfunctory yes or no; we must go into details; and by careful questioning we will often learn that a death which has been ascribed to influenza, menopause, confinement, pneumonia, bronchitis, typhoid fever, was preceded by many months of illness; was accompanied by loss of weight, nightsweats or hemorrhage, was in fact an unrecognized, or by a curious paradox on the part of our patient, purposely concealed tuberculosis. Again, it will be well worth ascertaining not only whether the ordinary diseases of childhood have been gone through, but also whether the patient ever had cervical adenitis, prolonged otorrhea, marasmus, fistula in ano, disease of the bones or joints, or has drank milk from probably infected cattle; to inquire also, not only whether the patient has used alcohol and tobacco to excess, but whether he has at any time been associated with an expectorating tuberculous individual either in the home, the workshop, or the boarding-house. I cannot insist too forcibly that the most valuable data can be obtained from careful interrogation, not only as to the source or possibility of infection, but also as to the probable duration and course of the disease; facts, which both from a diagnostic and prognostic standpoint it is eminently desirable that we should know. Not that it is possible in every case to learn the source of infection but this can very frequently be done.

By incipient tuberculosis is meant "a slight initial lesion in the form of infiltration limited to the apex or a small part of one lobe, without tuberculous complications, and with slight or no constitutional symptoms (particularly including gastric or intestinal disturbances, or rapid loss of weight); slight or no elevation of temperature or acceleration of the pulse at any time during the 24 hours, especially after rest. The expectoration is usually small in amount or absent. Tubercle bacilli may or may not be present."[1]

Any case of bronchitis lasting ten weeks, in a patient who is not suffering from a constitutional or diathetic dyscrasia, should be regarded with suspicion. The absence of sputum is no better reason for a negative diagnosis than the absence of cough. Vasomotor instability, manifested by alternate flushing and pallor, by sweating and chilliness, and increased by slight exertion or excitement, is commonly encountered. Many of the symptoms heretofore regarded as pertaining to the incipient stage we now know belong to the advanced disease. Nightsweats, profuse expectoration, hemorrhage, dyspnea, dysphagia, high fever, chills, and severe prolonged hoarseness can no longer be considered early manifestations.

If, in a suspected case, after careful examination of the chest with special reference to the apices, no lesion is demonstrable, a painstaking search should be made for enlargement of the bronchial glands. Slight interscapular dulness, and Eustace Smith's sign may often, particularly in children, clear up the case, especially when accompanied by severe paroxysmal cough without much expectoration.

It is well to remember also that about 80 percent of all cases of pleuritis owe their existence to the invasion of the tubercle bacillus, and that the reason why so many persons with this disease have seemed to "go into consumption" is that we have had to deal with a tuberculosis from the outset, which merely happened to make its first manifestation in the pleural cavity.

It is also an established fact that some of the cases of typhoid fever which terminate as tuberculosis are simply exacerbations of tuberculous disease, either thoracic or abdominal; although in some of them a *bona fide* attack of typhoid may sufficiently depress the patient's vitality to allow a healed lesion to break forth anew, or to render him more susceptible to infection

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[1] This definition is the one adopted by the National Association for the Study and Prevention of Tuberculosis.

The apices of the lungs extend from 3 to 5 cc. above the clavicles and are, according to Eichhorst, usually higher in women. Auscultation of the chest should be performed first during normal, and aferwards during deep, breathing; and this should be done before the patient has been made to breathe deeply for purposes of inspection, etc., because rales that are present may entirely disappear after a few forceful respiratory excursions. On deep breathing the physiologic difference of the inspiratory and expiratory murmur on the two sides of the chest becomes more intensified. Bronchovesicular expiration is at times noted normally at the extreme apices, especially above the clavicles, and whispered pectoriloquy may also be heard. Under these conditions, pathologic changes may be excluded by the absence of abnormality in percussion, palpation, inspection, by the absence of rales and fever, and by the fact that a more or less similar degree of respiratory harshness is produced by deep breathing on the opposite side of the chest. Further, the pitch of the expiratory note is not abnormally high. The pectoriloquy which may be encountered is simply due to the proximity of the trachea. It is unaccompanied by other signs of pathologic import, especially rales; and lacks the hollow resonating quality which is characteristic of a cavity. Furthermore, when a single cavity of small size exists, it is usually not located at the extreme apex, but below it. When supraclavicular whispered pectoriloquy is due to apical infiltration it is much more intense and of higher pitch than the physiologic variety. Intrapulmonary rales are sometimes simulated by crepitant sounds occasionally produced by contracting muscles (muscle rales); the latter are, however, more like friction sounds and are noted symmetrically, frequently over the upper part of the chest. The rales that occur in healthy individuals after prolonged decubitus pass off after a few deep inspirations, and are most frequent at the bases. Suggestive physical signs are most commonly heard in adults near the right apex posteriorly, and in children near the bifurcation of the trachea.

Physiologic variation.—It is my belief that physiologic variation of the physical signs and the normal difference between the two sides of the chest is as a rule greatly overrated. On the right side, the percussion note is often slightly higher in pitch than on the left, but no more so than can be accounted for by increased muscular development, a statement which is corroborated by the fact that in the left-handed people the condition is reversed. Vocal resonance and fremitus are also slightly more intense on the right, and the breath sounds a trifle more harsh. If the last named conditions are found on the left side we are nearly always confronted by pathologic change. It is to be noted, however, that the relative length of inspiration and expiration are not altered in health. Physiologic differences are, in my experience, much more marked and more frequent in women than in men.

Anteriorly at the right second costosternal junction, an area which overlies the right bronchus, bronchovesicular, and even bronchial breathing are often heard; there is, however, in such a case no corresponding change in the resonance.

The examination of the chest should be made with all the clothing removed, under good illumination. It will repay the examiner to spend some little time at the outset in getting the patient to breathe properly; quietly at first without any conscious effort, and with the avoidance of muscular rigidity, so that the muscles of the shoulder girdle may be entirely relaxed. Later he can be made to breathe gradually more deeply. The head must not be craned to either side because a contracted muscle such as the platysma, sternomastoid, or trapezius, causes a duller percussion note than is the case under relaxation. Furthermore, the muscle tones produced by such contractions interfere with a just estimation of the vesicular murmer. Again, the compression of the trachea which often results from cephalic deviation either backward or forward, may give rise to raucous, throaty sounds in the chest, which closely simulate bronchial breathing. Stenosis of the trachea or pressure upon the bronchi from aneurysm, tumor or enlarged bronchial glands, may produce a similar result. These cases are differentiated from tuberculous consolidation through the equal bilateral quality of the sounds produced and by the absence of changes in resonance and fremitus. Expiration must be entirely passive. If there is any nasal obstruction, the patient should breathe through the mouth.

Inspection.—Very valuable data may be obtained from inspection; not nearly enough attention is usually given to this method. The examiner should especially look for inequality of expansion, flattening of the tissues, or retraction, with especial reference to the supraclavicular and infraclavicular regions. We must not be thrown off our guard by the fact that the patient has in other respects a well-shaped chest and no alar scapulas. By standing behind the patient and looking over his shoulders it is very easy to detect inequality of expansion, or a delay of the same, on one or the other side. Distinctly restricted motion on one side without skeletal or muscular deformity is very suggestive of tuberculosis. Enlarged cervical, auxillary, or inguinal glands when present are often valuable corroborative evidence.

The observation of these conditions is of vastly more importance than the socalled phthisinoid chest, bright eyes, lusterless hair, etc., to which importance is so often attached. Tuberculosis occurs in thoraces of excellent conformation, and most of the features which go to make up the "classical picture" do not become evident until the disease is advanced. The mere fact that the patient appears well nourished and has good color is no evidence that he may not have tuberculosis; in fact, in truly incipient cases, the subjects often look healthy.

Palpation.—Palpation rarely does more than corroborate the findings of percussion and auscultation; frequently its results are negative, especially in incipient cases. Theoretically, fremitus should be increased over a consolidation, but often this is not the case, owing to pleural thickening and to other reasons which are at present insufficiently explained. I would not however be understood as saying that this method of diagnosis should be neglected; it often helps to substantiate other findings in cases of doubt. Palpation should be performed with the ulnar side of the palm, not, as is commonly the case, with the fingers; and the hand should rest but lightly on the underlying skin.

Percussion.—Both light and superficial percussion should invariably be practised, and care should be taken to strike the blow quickly, at a right angle to the plane of the chest, and to avoid allowing the fingers to remain in contact once the blow is delivered, as this tends to diminish the resonance. Light percussion will best elicit pleural thickening or superficial lesions, but deep percussion is much more satisfactory if the consolidation is deepseated.

Percussion should be made over corresponding areas of the right and left chest; the finger should be firmly pressed against the skin and applied parallel, not at right angles, to the rib. The finger must be struck with equal force on the same spot and the results compared, rib with rib, and not rib with interspace. The results must be considered in correlation with the condition of vocal resonance and fremitus.

Krœnig's method of percussing the apices is not usually of much value. In my experience, the height of the line of resonance sinks on deep inspiration, a condition which is probably due to the fact that when the lung expands the apex spreads laterally rather than longitudinally.

Percussion is most advantageously performed with the patient standing. In the recumbent posture the upper lobe of the lung becomes more resonant and minor shades of impairment may entirely disappear.

Auscultation.—We should listen not only for prolongation and increased harshness and pitch of the respiratory murmur, for often a diminution of the same is equally important. Cogwheel inspiration is suggestive, but is encountered in nontuberculous cases. Friction sounds limited to the upper lobes are of great importance and fairly frequently encountered. But of all auscultatory signs, localized rales, appearing in about the same area at different times, usually fine crepitations, are the most constant and important. Such rales are best heard in the morning, or on damp days, or when the patient is tired; in women at the menstrual period. They are most frequently detected during inspiration, especially at the end of it, and vary in quality, size and number. Sometimes only one or two may be noted, and even these may temporarily disappear after a few respiratory excursions. On the other hand, they are often elicited by deep inspiration and by coughing when not otherwise audible. Together with these rales some changes in the vesicular murmur practically always exists.

Suppression of breath sounds, or enfeeblement of them, is a condition which is often overlooked. It may be due to pleural thickening or exudation, but it may also arise from infiltration and the blocking of the alveoli. I annually examine numerous persons sent to me as having incipient cases in whom the lungs are so riddled with tuberculous deposits that little or no air enters, and as a result no harsh breathing is produced. Absence of vesicular murmur is not a sign of health. "Whenever the expiratory murmur approaches or exceeds the inspiratory in duration or intensity, and whenever it becomes rough and harsh, there is good ground for assuming a catarrh of the mucous membrane, and, if in the apex, a tuberculous process."

Tuberculous consolidation usually does not give as high-pitched expiration as does the consolidation which results from pneumonia, probably for the reason that air is not so effectively excluded from the tissues. In incipient cases the vesicular murmur is only slightly more harsh than normal.

As to the relative importance of the four methods of investigation, the odds are, in my experience, vastly in favor of auscultation. Inspection, including mensuration, and percussion are perhaps of nearly equal value; palpation comes last. In an examination of 201 early cases of tuberculosis at Saranac, Brown found that 28 yielded negative results on percussion, while auscultation yielded some positive sign. Prolonged expiration was present in 32 percent; wavy breath sounds at the site of the lesion in 10 percent; puerile breathing in 12 percent; harsh breathing with loss of vesicular murmur in 8 percent. There was some deficiency of the vesicular murmur in 41 percent while rales occurred in 70 percent. But, as cannot be too forcibly insisted upon, the diagnosis can very rarely be made upon any one sign, but necessitates a consideration of the clinical picture viewed in the light of the physical signs.

Temperature.—The presence of fever is one of the most important and frequent symptoms, and of the greatest help in making a diagnosis. This temperature is usually slight in amount, from .5° to 1.5° and often only present in the afternoon or evening, after exertion, or at the menstrual periods. In taking the temperature a one-minute thermometer should be kept under the tongue with carefully closed lips for at least five minutes.

All cases of "debility," anemia, chronic bronchitis, dyspepsia, or vague ill health with subnormal weight, which show an evening rise of .5°, in which this condition is not demonstrably due to some other cause, should be classed as suspects, carefully watched and repeatedly examined for lesions of incipient tuberculosis.

Simple tuberculosis is in the early stages not accompanied by hectic, or even high fever; if these exist we have to do with mixed infection. On the other hand, the absence of fever is no reason for negative diagnosis of tuberculosis. Temperature is simply a reaction of the individual to toxin, and depends to a certain extent on the idiosyncrasy of the patient. In far advanced cases, especially those of the fibroid type, the patients are often apyrexic. In cases of doubt, when the patient cannot be under daily supervision, he should procure a thermometer and take his own temperature at frequent intervals during the day, keeping careful record of the results.

Pulse.—As I have already pointed out in a previous paper, the condition of the pulse is of extreme importance in the early recognition of tuberculosis. Given an abnormally rapid pulse in an individual under middle life, unless there is evident cause for the same, we should at least consider and look for tuberculosis. This increase of pulse-rate is often only present at certain times, such as those mentioned in connection with pyrexia. Practically we may say that the heart action is, in a large number of tuberculous cases, very unstable; entirely inadequate stimuli, either mental, physical or visceral, may produce undue acceleration.

It is very often impossible to make a diagnosis in suspected cases from a single visit. Several examinations, extending perhaps over weeks, made at different times of the day and under various conditions, are frequently required. In such cases, as has already been stated, regular observation of the temperature and pulse are of the greatest assistance. In the presence of slight regular fever and suspicious symptoms, the inability to demonstrate pathologic changes in the chest does not justify a negative diagnosis. Such cases, however, are the exception. As a rule, careful repeated examinations will reveal significant findings, and in the absence of these the patient should be given the benefit of the doubt, and treated as if the diagnosis were definitely established. This entails no great hardship and can at least do no harm, because treatment of this sort can very often be satisfactorily carried out at home. The fact that a patient picks up weight and gets back to his normal in a few months is not proof that he did not have tuberculosis, although it is unfortunately too often so considered, owing to the skepticism which still exists in the mind of the physician himself, as well as in the estimation of his professional confrères.

Perhaps the most puzzling cases in which one is called upon to make a differential diagnosis are those in which there is evidently an old tuberculous focus at some point in the lungs, and the question arises as to whether the lesion is an active one or whether the symptoms are due to an intercurrent infection. But these cases can usually be satisfactorily decided if the patient is kept under observation for a time. Cases in which only the pleura or the bronchial glands are infected must be diagnosticated by similar methods.

Tubercle bacilli should never be considered absent unless they have been carefully looked for on at least a dozen different occasions. Inoscopy may reveal their presence when they are not otherwise demonstrable. In a few cases it may be necessary to resort to the tuberculin test, a procedure which is safe, satisfactory and justifiable, if Koch's old tuberculin is employed in gradually increasing doses ranging from .5 to 5 gm.

To discuss the various pathologic conditions which may be confused with incipient pulmonary tuberculosis is beyond the scope and intention of this article. What I have endeavored to do is to point out what seemed to be the more important points in connection with the subject, together with the reasons why a diagnosis is so rarely made in truly incipient cases.

There are four common, easily ascertained, and highly suggestive symptoms, the existence of which should always arouse our suspicions unless their presence can be definitely explained by other grounds. They are: (1.) Rapid pulse. (2.) Evening rise of temperature. (3.) Loss of weight. (4.) Cough. *The protracted existence of any two of these symptoms should require that good cause be shown why a diagnosis of tuberculosis should not be made.*

If we conduct the examinations of our patients carefully and conscientiously we need have no fear that we are making the diagnosis of tuberculosis too frequently. The study of autopsies has taught us that high as the mortality from tuberculosis is, a greater number of individuals recover from the disease without knowing they ever had it, than die of it.

Cancerous Disease in the Colored Races.—An active inquiry is being made in Natal by a local committee cooperating with the Imperial Cancer Research Fund as to the occurrence of cancerous disease among the colored races in the colony and also among the lower animals. The assistance of all practitioners of human and veterinary medicine has been secured, and sportsmen and naturalists are also taking an interest.

PULMONARY TUBERCULOSIS IN ITS RELATION TO OBSTETRICS.[1]

BY
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Formerly it was thought that pregnancy exerted a favorable influence upon tuberculous processes, and later, in the not remote past, that its influence was at least not harmful, but with a closer study of the clinical pathology of tuberculosis, following the correct understanding of its etiology, etc., the profession has reached a realization of the baneful influence of gestation upon the tuberculous, in fact, the pendulum has swung so far in the opposite direction as to give rise to such assertions as that of Dubois, quoted by Osler, that "if a woman threatened with phthisis marries, she may bear the first accouchement well; the second with difficulty; the third never." In justice to some of the older observers, it must be said, that throughout the nineteenth century there, now and then, appeared in the literature a paper expressing views not unlike those held today.

The rapidity with which pulmonary tuberculosis develops, under ordinary conditions, during pregnancy, and especially during the puerperium immediately following labor and the tendency of latent foci to develop activity at such times are matters of common observation to obstetricians. This predisposition is the result of many factors, among which may be mentioned the frequency of impaired digestive function, especially when accompanied by emesis, varying degrees of toxemia, the habit of seclusion so common with pregnant women, thereby living under conditions of lessened hygiene, lessened breathing capacity, due to encroachment upon the chest cavity by the abdominal contents and greater demands upon metabolism due to the added presence of the fetus. Some observers hold that pulmonary tuberculosis usually improves, or at least is retarded during pregnancy but rapidly progresses during the puerperium. Dr. C. D. Palmar in discussing Dr. Malsbary's paper is quoted as follows: "I think it is correct to say that pregnancy delays the progress of tuberculous disease when it exists in women; in other words, I think that in a woman who is pregnant, the tuberculous process is more slow than if she were not pregnant." He attributes this to general conditions associated with pregnancy such as increased weight, increased blood supply, enlarged viscera, especially heart, increase in red elements in the blood and to "physical resistance to disease and injury which pregnancy insures." From my own observation I have not made a similar deduction, I have observed, in some cases, in which numerous moist rales were present before pregnancy, that as the uterine tumor developed, these sounds became more difficult of observation, due, it seemed to me, to limitation of the respiratory movement consequent upon encroachment upon the thoracic space, rather than to retrogression of actual disease. However, all admit that pulmonary disease tends to rapid progression during the puerperium, under ordinary conditions.

In the consideration of prophylaxis comes the question of the advisability of marriage for the tuberculous. However we may differ regarding the equity of marriage by men with active tuberculosis, we should be unanimous in withholding our sanction in the case of women, who have the added risk of probably becoming pregnant. Exigencies may produce exceptions to this rule. In cases in which the process has become arrested, or apparently cured, the experiment may sometimes be tried; but I feel convinced that it is only in the exceptional case that we should advise or sanction marriage in women who have or have had pulmonary disease. The future may broaden our views with better special facilities for the general care of the tuberculous pregnant patient. If the question simply involved the future of the contracting parties it would not be one of such gravity but we must constantly bear in mind that the greatest good in our fight against this scourge is in the light of public prophylaxis and in promoting immunity to future generations.

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[1] Read before the Rutland Clinical Club, a local society for the study of tuberculosis, at a meeting October 13, 1905, at the Massachusetts State Sanatorium for the Tubercular.

To what extent are we justified in sanctioning measures to prevent conception in those already married? Our statutes wisely prohibit the sale of paraphernalia to be used for the prevention of conception, yet when the probabilities are that pregnancy would result in converting a healing process into hopeless disease. I feel that it is not only our moral duty to advise such against having children, but further that we are justified in instructing our patients what to do. Abstinence from coitus would be ideal, but if advised it will be only in the rarest instance that the advice will be followed. We know that menstruation is not a necessary accompaniment of ovulation and the patient should be instructed that the absence of the former does not insure her against becoming pregnant, and that conception may take place at any stage of her disease, occasionally even after amenorrhea resulting from the anemia of advanced disease. Advising the dissolution of the marital union, it seems to me, is beyond the duty of the physician; though it has been suggested as applicable in certain peculiar instances.

Given a case of pregnancy complicated by incipient pulmonary tuberculosis, what should be our conduct? Experience teaches us that as a rule, under ordinary conditions, at term, or soon after, during the puerperium these patients are either beyond a prospect of recovery or their chances are greatly lessened for a favorable result from any treatment. Undoubtedly there are, occasionally, women with incipient active tuberculosis who stand pregnancy well, but I am sure that under the conditions which usually prevail such cases are rare. On the other hand, we see women who are subjects of long standing processes, chronic and arrested cases, who bear pregnancy with little or no harm. Obviously then the end result, for the mother, would be better if these early active cases were placed in the category of those in which the interruption of gestation is justifiable. The fetus, however, has its rights which demand respect, and the taking of life is a matter of gravity, even in the case of an undeveloped fetus. We, occasionally, however, see cases in which the rapid progression of the disease in the early months in spite of all effort to stay its progress, makes us practically positive that continued gestation and the puerperal condition will result fatally. Personally, I do not see why the indications for abortion are not as well defined here as in hyperemesis gravidarum, toxemias, etc. In either event it is the exceptional or occasional case in which this extreme measure would be justifiable. Laryngeal involvement should, I believe, considering its prognosis, even under favorable circumstances contraindicate the consideration of interrupting pregnancy. This was illustrated by Löhnburg. Küttner finds the deathrate among children whose mothers suffered from laryngeal tuberculosis during the pregnancy, to be very high and he considers the measure permissible when it offers the only chance of saving life.

Hahn emphasizes the fact that pregnancy and tuberculosis constitute a severe complication. He advises the prevention of conception, and while he thinks nothing can be gained by miscarriage after the fourth month of pregnancy, in the first three months if aggravation of the disease is apparent, with the consent of the patient, and due consultation, abortion may be induced. Dr. F. A. Higgins, in a paper read at the fifty-fifth annual session of the American Medical Association, classifies the indications for the termination of pregnancy and makes very logical argument for including active tuberculosis. Naturally this paper met some adverse criticism.

An argument which has been advanced against the consideration of this class of conditions as an indication for abortion, is that it offers an excuse for the criminal abortionist and an avenue for his escape. It does not seem that this holds, however, for those who follow this nefarious practice are not wanting for excuse, clinical material, nor protection; and the only comforting feature of viewing this appalling state of affairs is the fact that conditions in America are not yet so extreme as those of Germany, and those of France, so fearlessly exposed by Doleris. The argument of the church is still the most tenable of any.

The question of artificial sterilization is ably discussed by Prof. R. Chrobak, from whom the following is quoted. "I believe that every case of pregnancy in tuberculosis should be looked upon as is pregnancy and carcinoma. In the latter case, and beginning carcinoma, no one would wait a moment before total extirpation of the uterus, at whatever age of the fetus. In the same way should we not do what we can at the earliest moment to aid the healing of the pulmonary tuberculosis? In the latter case we sacrifice the life of the fetus; while in the former, we not only do that, but also an important organ. I agree with Zweifel, who urges a broadening of the indications for the interruption of pregnancy in the tuberculous. Whether it is an abortion, or a miscarriage, it is immaterial to my mind. If, therefore, the interruption of pregnancy in the beginning and curable stage of tuberculosis is right in principle, then it seems to me there are indications for sterilization."

To be sure sterilization could be done in a case in which abortion was decided upon, without enough additional shock to be a great objection to the practice; but if the chance of the probability of arresting the disease is good, as it should be in any case in which this measure would be of avail, then, it seems to me, the chances that the patient could bear children at some future time, without great harm, would be so great as to obviate the necessity of artificial sterilization. Bacon, however, advocates the measure in cases in which a hygienic regimen is impossible.

Thus far, I have been considering this subject in the light of existing conditions. If such a radical change be made in the tuberculous pregnant woman's environment as to stimulate katabolism to the extent I believe possible, (in many instances sufficiently reinforcing her organism and at the same time supplying the needed nutrition to the fœtus in utero) the number of cases in which the procedure mentioned could be considered, would be materially lessened.

When we attempt this in the patient's home we are usually met by defeat. Often she is burdened with children; usually with cares which are constantly suggesting themselves in the familiar atmosphere of home. Regimen is seldom complete. Obviously, the ordinary institutions for the treatment of pulmonary tuberculosis, as *e.g.*, State sanatoriums, are not, in every way, ideal for this class of cases. The paramount thing in the management of obstetric tuberculosis is, as in tuberculosis occurring under other circumstances, a rigid règime in a favorable environment. If I were to suggest any difference it would be in degree only, *i.e.*, a little more emphasis upon *physical rest* than is usual and fresh air "to the limit." Here we often meet digestive derangements which tax our therapeutic and dietetic resources; and this, together with the necessity for attention to elimination by the emunctories, demands a closer individual observation than is generally customary in the treatment of pulmonary diseases in sanatoriums.

In looking through the list of institutions for the treatment of tuberculosis, published by Dr. Knopf, I do not note one which makes special provisions for these cases. It has seemed to me that the establishment of small rural maternities and obstetric wards in connection with other rural hospitals and sanatoriums, where women could be especially treated for tuberculosis during the gravid state and confinement, and through convalescence, would be productive of great good. Throughout this country there are many private maternities which cater to the unfortunate unmarried woman who has become pregnant. These "homes" though usually conducted for private gain, furnish an escape for these women from the criminal abortionist and often they are thus saved to useful future lives. Some such institution, specially directed toward the management of the tuberculous pregnant subject I am sure would serve a useful purpose.

But little need be said here regarding the use of drugs, as the indications for medication are dependent upon individualities, as is true of lung cases in general, however, it is well to call attention to the fact that creasote, which is undoubtedly a useful drug in a few specially selected cases, is said to have something of an oxytocic action, when given in large doses. Pregnant women are said to bear the tuberculin treatment well. Those who believe in administering ergot in hemoptysis should bear in mind its selective action upon the uterine muscle. The effect upon the fetus in maternal tuberculosis is not as a rule marked. Abortion may result, though probably not often, from constant coughing, and perhaps anemia may be a factor in such a result.

The question of hereditary transmission is always one of intense interest, and is probably far from definite settlement. We know that formerly great stress was placed upon direct heredity, and that now these views have so radically changed that we consider it a question of "soil rather than the seed." Surely postnatal infection is by far the commonest. Apropos of this, Naegelis' necropsy reports are nteresting; 97 percent of adults were found to be tuberculous while below the fifteenth year, but 50 percent showed lesions. Nevertheless, certain evidence goes to show that placental transmission may occur. Clinical evidence though not conclusive is suggestive. Labor does not differ from that in the nontuberculous, except, that in the asthenia of advanced disease the expulsive forces may be impaired, the patient is usually not so well able to stand shock and postpartum hemorrhage may rob her of muchneeded nutritive blood. In other words tuberculosis does not affect labor so much as the latter proves injurious to the organism, thus enchancing the retrogressive progress of the disease. Death not infrequently soon follows labor. Premature delivery made at any time after the fetus is viable may be indicated when rapid decline threatens. During the puerperium a liberal diet should be allowed. Nursing should be interdicted in the interest of both mother and offspring. While it may be possible that the breast may become contaminated by handling and the child thus become infected by nursing, it is very doubtful if bacilli ever are actually eliminated in the milk, except when mammary lesions exist. It is reasonable to suppose however, that toxins may be thus conveyed and the mammary secretion of one debilitated from any wasting disease is obviously not a desirable food for infant feeding.

CONCLUSIONS.

1. Active pulmonary tuberculosis and pregnancy constitute a dangerous complication.

2. Pregnancy exerts an unfavorable influence on pulmonary tuberculosis both immediately and remotely during the puerperium.

3. Measures should be taken to prevent the complication in women who are subjects of active tuberculosis. These measures may include the avoidance of marriage and the prevention of conception.

4. If the principle involved in the question of interrupting pregnancy is right, there are, occasionally, indications in the cases under consideration. Artificial sterilization is of doubtful utility.

5. Obstetric tuberculosis could be best treated in special institutions, for which a field exists.

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Public Health Bulletin for Italy.—The Minister of the Interior for Italy has ordered the publication of a monthly sanitary bulletin which will furnish particulars as to the distribution of infectious diseases, and supply information as to the sanitary conditions of Italy and as to measures taken by the sanitary officers of provinces, communes, and sea-ports.

METABOLISM OF WATER.

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Water is one of the most important constituents of protoplasm. Without it, the existence of living matter would be impossible and before the earth's surface had cooled to below 50°, life as we know it at least, was an impossibility. Water exists in protoplasm in quantity from 70 percent to 75 percent and is continually being eliminated from the body in varying quantities which require to be replaced. It cannot be considered as a food, it being a saturated molecule, its affinity for oxygen being *nil;* nor is it known that it produces any kinetic energy in the organism. The importance of water to life is shown by the rapidity of death as a result of its total withdrawal. Man can live over 40 days without food but a very few days of absolute deprivation of water will cause death. When an animal has lost 22 percent of its tissue water it dies, and grave disturbances occur when the loss is only 10 percent. The amount of water required by the system varies with the amount eliminated, which is much greater than is usually supposed. Atwater, whose experiments on human metabolism are the most complete, considers that the elimination of water in 24 hours from a subject at rest amounts by the lungs to 1000 cc., by the urine to 1000 cc., by the skin to 500 cc., by the feces to 250 cc.; a total of 2350 cc., in the 24 hours. Water may be considered as being taken into the system in three ways, by the ingestion of fluid, by the ingestion of solids, all of which as used contain about 75 percent of moisture, and as carbohydrates and fats which are oxidized in the body into carbon dioxid and water. The quantity of water taken by these methods is considerable; by the food about 700 cc., as carbohydrates and fats about 200 cc., leaving about 1500 cc., to be taken as fluid to keep up the balance.

The functions of water in the metabolic processes are eliminative, as a regulator of temperature and as a solvent and medium to carry the various nutrient substances to the tissues. As a regulator of temperature, it is eliminated by the skin, the evaporation cooling the surface of the body and also acting in a slight degree as an eliminant. As a solvent it forms the plasma of the blood and lymph holding in suspension the corpuscles and in solution the albumins and globulins as well as the effete matters of metabolism for elimination by the kidneys; also the inorganic salts, the function of which is to increase the solvent power of the plasma thereby assisting both in nutrition and elimination.

Thirst is nature's call for increased water supply and can be produced in different ways. Abstinence from water first withdraws water from the tissues, then increases the specific gravity of the plasma, thus reducing its solvent powers, rendering proper nutrition and elimination impossible. Thirst can also be produced by the ingestion of large amounts of inorganic salts which raise the specific gravity of the plasma, calling for more fluid to assist in their elimination. Excessive elimination of water occurs by the skin and lungs in exercise and by the kidneys, in certain diseases as diabetes mellitus, diabetes insipidus, and some forms of nephritis; excessive elimination also occurs from the intestinal tract in diarrhea. The ingestion of protein increases the physiologic demand for fluid; the end-products of protein metabolism are inorganic substances as urea, uric acid, creatin, creatinin, etc., which increase the specific gravity of the plasma calling for excess of fluid for their elimination. The ingestion of carbohydrates and fats, with reduction of protein, does not call for so much water on account of the end-products being carbon dioxid and water. The former is eliminated by the lungs and does not increase the specific gravity of the plasma, while the water produced tends to reduce the quantity required by ingestion.

The pathologic conditions produced by the ingestion of an excess of water are of experimental interest only. No patient will voluntarily drink more water than nature demands by thirst, but there are conditions in which there is an excess of water in the organism. The first condition produced by excess of water is that the tissues take up to supersaturation; this is followed by a decreased specific gravity of the plasma or hydremia, in which the bulk of blood will be increased. The first effect of this condition will be increased work upon the heart, A greater bulk of blood being in the circulatory system, it takes more force to pump it through the organism. It is probable also that nutrition will be interfered with. More work is thrown upon the kidneys to eliminate the extra amount of water in their effort to bring the plasma back to its normal density. The tissues are waterlogged, edema and ascites follow from compression of the capillaries, causing increased resistance to the blood stream. The effect of the ingestion of large quantities of water, especially with meals, has a tendency to increase the appetite; at the same time it may produce dilation or want of motility of the stomach which is so frequent a cause of digestive disturbances. With stimulants as tea, coffee, beer, spirits, wine, etc., the liquids usually taken in excess; much of the evil effects upon the system are due to their active principles. They are taken either because they are pleasant to the palate or for their stimulating effect, and not because of thirst. Water is not absorbed from the stomach except perhaps in very small amounts, but, any fluid containing even a low percentage of alcohol is more readily absorbed, and as the alcohol dilates the vessels and capillaries the bulk of the blood in circulation is rapidly increased at the same time there is a marked increased; elimination of water by the lungs. The reason the man who drinks a large amount of beer at night is thirsty in the morning is because the alcohol acts as a drier, causing greater elimination of water by the lungs and skin, also to some extent by the kidneys. The effect of alcoholic liquors in excess is rather to produce anemia of bulk and increased specific gravity of the plasma, and hydremia.

The pathologic effect of decreased ingestion of water is of interest, as anemia of bulk is by no means an uncommon condition in disease. On restriction of fluid the tissues first part with their surplus fluid to keep the plasma at its normal density. As a subject can very easily hold 10 or 12 pounds of surplus water in his tissues without appearing edematous there is, under normal conditions, a considerable amount of water in reserve. When the restriction of water has been carried further the specific gravity of the plasma increases, the bulk of blood decreases, the nutrition is impaired and the skin becomes dry, flabby, and wrinkled.

If the restriction is carried still further, there is usually an increased elimination of nitrogen, showing there is a destruction of proteid probably due to toxemia, with the accompanying increased elimination of phosphates; the elimination of CO_2. is, however, not increased, showing that the popular idea that restriction of fluid causes the decomposition of fat is erroneous. Restriction of water soon leads to an involuntary and distinct reduction of the total amount of food ingested, accounting for the reduction of fat in the obese under the thirst cures. So soon as the density of the blood is greatly increased the eliminating power of the kidneys is reduced and toxemia is the result. The values of the interchange of gases, *i.e.*, for the total oxygen metabolism, are not increased during thirst.

In certain diseases anemia of bulk plays a very important part. In fevers it is often impossible to get the patient to swallow sufficient water and even if he is willing it is difficult to get the nurse to give the patient a proper supply. When rectal feeding is resorted to, complicated and highly concentrated nutritious clysters are administered with great regularity but the administration of the required liter of water is neglected. In acute alcoholism the patient has probably been drinking straight liquor, eating nothing and drinking no water, also vomiting for some time; consequently no water has been absorbed; further alcohol increases the elimination of water by the lungs, skin, and probably by the kidneys, so that the anemia of bulk is very marked The administration of a few high enemas of artificial serum will usually cause the vomiting to cease and the appetite and general condition to improve.

In the vomiting of pregnancy the same condition of anemia of bulk prevails; the same treatment often gives satisfactory results. In heat-collapse the high enema gives almost immediate relief. In the anemia of neurasthenia and melancholia, patients will begin to eat voluntarily after a few enemas of artificial serum thus avoiding the torture of feeding with the tube.

In all cases in which the elimination of urine is below 600 cc. in 24 hours, an increased ingestion of water is needed. When the nitrogen elimination is above 12 gms. in 24 hours, and the urine contains urobilin, ethereal sulfates, indican, or uric acid in excess, the administration of 250 cc. to 500 cc. of water containing a little sodium chlorid half hour before meals, has the advantages that it washes out the stomach, dissolving mucus, stimulates the appetite, and increases the amount of fluid in the body, at the same time flushing out the liver and kidneys, relieving the plasma of any excessive quantities of the organic substances, the products of proteid metabolism. It is of importance that the water administered should contain the inorganic salts of the plasma in their proper proportion *i.e.*, sodium sulfate 0.008, sodium chlorid, 0.1, sodium phosphate 0.003, sodium carbonate 0.005, potassium sulfate 0.008, in 250 cc. of water. (This formula can be obtained in tablet form under the name of "antisclerosis tablets" and is the treatment advocated by Trunecek for arteriosclerosis.)

The treatment should also include a gradual reduction of protein in the diet until the nitrogen in the urine is reduced to 6 gms. To accomplish this without discomfort to the patient, the reduction in protein should be gradual. The secretions of the stomach adapt themselves to the amount of protein taken and any sudden reduction is apt to produce symptoms of hyperchlorhydria. As the protein is reduced, the desire for fluid will gradually decrease as well as the appetite for meat. This method of treatment will be found of special value in cases of "high feeders" who develop symptoms of depression and irritability of a neurasthenic type often associated with many aches and pains usually ascribed to rheumatism, neuritis, or gout.

There are certain diseases in which the amount of fluid ingested should be curtailed to the minimum quantity compatible with perfect metabolism and elimination. When the reduction of liquids is carried too far, the appetite may be lost completely; there is a loss of flesh over and above that due to starvation, but little or no loss of fat. The loss of fat that occurs in the obese undergoing thirst cures is the result of loss of appetite and not of the reduced fluid; a decreased volume of blood reduces the amount of fluid in circulation at the same time decreasing the work upon the heart; the body-weight is reduced by dehydration of the tissues. The reduction of liquids in therapy has been practised from very early times, Hippocrates advising that patients with heart disease should be rendered "*Siccum et siccissimum*" by limiting both the solids and liquids of the diet, later it was ordered in the treatment of aneurysm. In 1850 Schroth introduced the "Semmelcur" in which the patients were allowed to eat as many dry rolls as they pleased but their fluid was reduced to a minimum. Some of the patients developed scurvy, a few died, and a temperature of 40°C was not uncommon. Modifications of this treatment are still practised at various institutions under different names.

Gastric dilation, notwithstanding the arguments of Albu, is distinctly benefited by restriction of fluids. It is evident that whenever the evacuation of the gastric contents becomes difficult the greater curvature of the stomach is dilated, occupying a position considerably lower than the pylorus. Solid ingesta can be raised to the level of the pylorus more easily than fluids, for the latter are more difficult to propel upwards than solids. Fluids are more voluminous in proportion to their nutritive value than are solid articles of food. As no water is absorbed by the walls of the stomach the food acts as a dead weight whenever it cannot readily pass through the pylorus; a dry diet will therefore spare the dilated organ when its muscular tonicity is weak. On the other hand the drinking of a little alkaline water after meals as-in the movements of the stomach contents, lessening the danger of dilation in pyloric spasm. As the cause of the pyloric spasm is often hyperacidity, the alkali neutralizes the excess of acid thereby alleviating the spasm.

The treatment of cardiovascular diseases by restricted ingestion of fluids dates back to the middle ages but was revived by Oertel in 1884. He proposed to dehydrate the organism by reducing the amount of fluid ingested and by stimulating the elimination of water through the skin and lungs, in failure of cardiac compensation, by means of muscular exercise, diaphoretic baths, and injections of pilocarpin. Oertel argued that these cases were due to hydremic plethora, an hypothesis which is difficult of proof. We do know however, that the normal distribution of the blood is changed, the arteries containing less and the veins more than normal. In well compensated cardiac lesions, the concentration of the blood is normal or increased, particularly in lesions of the right side and in congenital heart disease. In cases with complications, as insufficient nutrition, anemia or hydremia may occur. Blood-examinations in cardiac insufficiency showed the percentage of water to be normal or very slightly increased but when a marked hydremia was found the patients were suffering from complicating diseases.

The fundamental question is not, however, touched by these results as it is immaterial whether the water remains in the bloodvessels causing plethora or hydremia, or whether it diffuses into the tissues and is excreted through the lungs, the skin, or the kidneys; the task imposed upon the heart is increased if much water is ingested. All the water that enters the stomach must pass through the heart before it can reach the emunctories. The objections to the validity of Oertel's claims based on blood examinations have been overruled by clinical experience which proves that restriction of fluid spares the heart and is of great importance as a prophylactic, while when disturbances of compensation occur digitalis becomes a necessity.

In renal diseases, the same principle applies both the liquid and the solids in the urine should be reduced to the minimum compatible with physiologic economy. In obesity, the treatment by restriction of liquid has long been popular; but, as has been explained, the loss of weight is largely due to the reduction in the amount of water in the tissues; which may easily amount to five or ten pounds; the loss of fat is due to the loss of appetite which is coincident with the regimen.

In all diseases it is obvious that the physiologic economy of digestion and of elimination are of primary importance; in other words, perfect nutrition and metabolism should be obtained with the minimum amount of work to the organs of digestion, circulation, and elimination.

A person at rest, on absolute starvation, eliminates 4 to 5 gms. of nitrogen in 24 hours; which must represent the loss by tissue metabolism. If we then give only sufficient protein to supply the deficiency, keeping the subject in nitrogen equilibrium, the work of the digestive process of protein is reduced to a minimum, at the same time that the eliminative process is also at a working minimum. The body requires about 2000 to 2500 calories for nutrition, which should consist of 60 gms. protein – 246 calories, 100 gms. fat – 930 calories, 240 gms. carbohydrates – 984 calories, a total of 2160 calories; which is ample for any patient suffering with cardiac or kidney disease, the patient taking only sufficient fluid to keep the urine at about 600 cc. in the 24 hours with a specific gravity of about 1024.

RECENT STUDIES IN MEASLES.[1]

BY

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Many observers, by simply applying the blood, tears, or mucus from the nostrils or bronchia to scarified areas, have tried to bring about the phenomena of measles, but generally without success.

The earliest authentic instances of inoculation experiments in measles were carried out by Home[1] of Edinburgh, in 1758. He is said to have successfully inoculated measles from one person to another by scarifying the skin and applying upon this area the blood of a person suffering from the disease. According to Themmen the tears and blood from a case of the malady placed upon the skin of five healthy children produced no effect whatever.

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[1] Read by title before the Path. Soc., of Phila., March 1, 1906.

In 1842 Katona[2] inoculated 1,122 individuals with positive results in 93 percent and without any evil effects. He inoculated as in vaccination by means of a needle dipped into the fluid mixed with blood obtained by opening the small vessels when the eruption was at its highest. On the seventh day fever appeared with the usual early symptoms of the disease, followed by eruption on the ninth or tenth day and in one instance not until the thirteenth day. (These inoculations were made during an epidemic, so that the opportunity for natural infection was present.)

Hektoen[3] inoculated the blood from two cases of measles into healthy adults, following which there appeared in each instance a maculopapular eruption, rise of temperature and a branny desquamation of the rash. Though not definitely stating the nature of the virus, he claims that it is present in the blood of patients with typical measles during the first 30 hours of the eruption, and still retains its virulence for at least 24 hours when such blood is inoculated into ascites broth and kept at 37° C.

Speranza, Bufalini, Locatelli, Rossi, Figueri, Horst, and Percival[4] all claim to have had successful results in the inoculation of measles. Myr,[5] Albers, and Thomson were successful in their attempts to produce the disease by inoculations.

As to the nature of the specific cause of measles, there have been many attempts made at its isolation. Some observers have isolated a bacillus, others a coccus, while still others claim to have observed animal parasites. As in the other exanthems (variola, vaccinia, and scarlet fever), bodies or parasites have been found; it seems probable that we may look to this group of organisms as causing or playing some part in the etiology of measles.

Doehle[6] noticed small oval bodies in the circulation and in the red cells, ranging from .5 to 1 micron in diameter. Klein is quoted as having seen such bodies emigrate from the red cells and become actively motile just as if flagellated. In the red cell from which the body escaped there remained a vacuole corresponding in size to that of the emigrated body.

Zlatogoroff[7] isolated from the blood in 17 out of 24 cases of measles a small bacillus, Gram positive, slightly motile, and usually occurring in pairs. Canon and Pielicke observed a bacillus in the blood, sputum, and secretions of the nose and eyes, which persisted throughout the disease, but disappeared when convalescence set in. It was isolated in 14 cases and grown successfully only in bouillon.

Borini[8] noted the presence of a bacillus in the blood in several instances during the malady, which developed in cultures after 36 hours. It was small, delicate, Gram negative, and died out after several transplantations.

Lesage[9] found a delicate micrococcus which grew best upon agar, stained faintly and was Gram negative. It was found constantly in measles and was not present in scarlet fever nor in a number of healthy children. In 53 children who had had the disease it was found twice.

Von Niessen,[10] in the blood and exanthem, discovered a bacillus which resembled the one studied by Canon and Pielicke but differed from this organism by growing upon glycerin agar and potato with a pinkish color. It was called *Bacillus roseus*. Czajkowski[11] observed a bacillus in the blood, while Josias[12] failed to corroborate these findings in 24 cases.

Arsamakor[13] in the examination of 665 cases of measles found a club-shaped bacillus 5 to 6 microns in length.

In my observations, studies were made of the serum obtained by blistering over the eruption in the early days of the disease. The vesication was accomplished by placing a small quantity of ammonia, 20 percent, upon absorbent cotton and covering with a sterile gauze dressing. The chemical was allowed to remain from 20 minutes to one hour. The serum was collected in sterile capillary glass tubes and examined in the fresh state. Only upon the rarest occasions were red cells or leukocytes in any number observed in this fluid.

Upon examination with the oil immersion lens a more or less constant hyaline body was detected possessing the following characteristics. In size it varied from one-tenth to one-sixth the diameter of a red blood cell. It was generally spheroid while ovoid or pyriform forms were also seen. It was, as stated before, perfectly hyaline, and possessed or had attached to it a round or irregular oval shaped granule of a brownish black color which was actively motile.

This granule traveled around the entire periphery of the body in a most deliberate manner, stopping every now and then, and appear to try and gain an entrance into the body. Where this latter phenomenon was noticed the pyriform shape was best brought out. In two or three instances flagella were seen but never more than two. In the same specimen of fluid another hyaline body, also motile but containing from two to four small motile granules, was occasionally seen. The first described hyaline body with the peculiar granule, was observed in 39 out of 41 cases of measles, examined usually upon the second day of the disease. In the two unsuccessful instances the serum was not obtained until the fifth day of the eruption, when it was fading. The body was stained with Wright's blood stain, though poorly, and in these preparations the granule was seen to be situated eccentrically or upon the periphery.

Few attempts have been made to cultivate the body in small quantities of serum left in the tube, and incubated at 37° C. but without success. No bacteria were encountered in any of the preparation.

Though the nature of this cell is problematic it seems that it possesses characteristics constant enough to be classed among the cytoryctes. I do not presume or claim that this body is the cause of measles or that it plays any part in the etiology, yet its almost constant presence in the serum of the early eruption is a most interesting fact and seems suggestive. No similar bodies were identified in normal serum, the serum from a few cases of scarlet fever or the serum from a number of syphilitics. A very minute hyaline body was observed by me a couple of years ago in the serum from the vesicle in several cases of variola.

The body was exceedingly refractile, very minute and possessed a rapid darting motion, and lacked the brownish black granule.

I wish to thank Dr. John D. Wilson, resident pathologist at the Philadelphia Hospital, for very valuable assistance rendered in this work.

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LESIONS OF THE NEUROFIBRILS IN PATHOLOGIC STATES, WITH REPORT OF NEUROFIBRILLAR CHANGES IN A CASE OF HYDROPHOBIA, AND ONE OF PERNICIOUS ANEMIA.[1]

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Lesions of the neurofibrils have been recorded as occurring in a variety of pathologic conditions, chiefly by the French and German observers, and more especially by Marinesco. This author has contributed largely to the literature upon the subject in a series of papers published since 1903.

Each additional contribution has tended to show that the reactions of the neurofibrils in the majority of pathologic states consist in variations in intensity, rather than actual difference in kind; the severity and degree of diffusion of the cause, regulating the extent and character of the lesions

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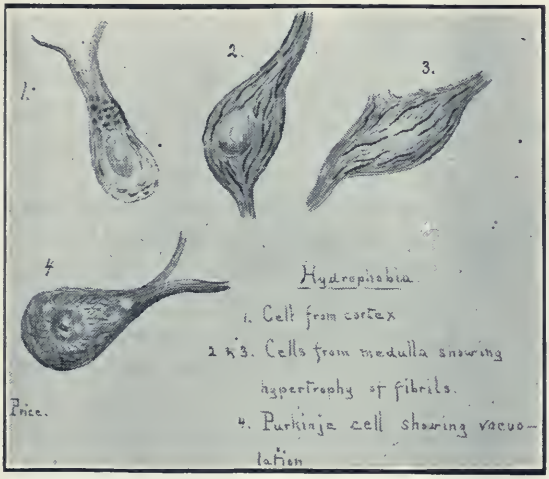
[1] Read at the meeting of the Philadelphia Neurological Society, March 27, 1906.

Changes of the fibrils have been reported as occurring in hydrophobia and tetanus of animals, meningitis, hemiplegia, paraplegia, Landry's paralysis, senility, senile insanity, paresis, delirium tremens, confusional insanity, paranoia, idiocy, and manic depressive insanity.

Beside this list of diseases, lesions have been observed in cells after section of the corresponding nerves, in exhaustion and starvation, in artificially induced anemia, and in decomposition succeeding death.

What may be considered as the typical degenerative change is seen in the neurofibrils of cells after section or tearing off their corresponding nerves. These lesions, as described by Marinesco,[1] are as follows:—First, pallor, with reddish coloration and granular appearance of the fibrils, next, granular disintegration and fragmentation, and still later the cells atrophy, lose most of their dendrites, the fibrils nearly or quite disappear, the cells become granular or pigmented and assume a brownish red color. Donaggio[2] claims to have observed after section a primary swelling or hypertrophy of the fibrils.


1.
2.
3.
4
Hydrophobia.
1. Cell from cortex
2 & 3. Cells from medulla showing hypertrophy of fibrils.
4. Purkinje cell showing vacuolation
Price.

Hypertrophy has also been observed in the fibrils, in artificially induced anemia, senility, in the medulla of newly born animals, and in cells on the road to repair. Fusiform hypertrophy has been seen in rabies induced in animals, and during hibernation.

Degenerative changes may commence in the fibrils in the center of the cell, peripherally, or diffusely. The most common beginning is in the fibrils immediately about the nucleus. Changes in the neurofibrils and in the chromatophile elements, as a rule, are directly associated as to occurrence and progression.

In comparing the changes occurring in neurofibrils in other pathologic conditions, with their degeneration following nerve section, we find the parallel of the earliest change in the pallor, swelling, and reddish coloration observed by Ludlum[3] and others in exhaustion.

Changes corresponding to the final degenerative lesions, have been reported by several observers as occurring in paresis, and are also seen in rabies and Landry's paralysis.

Marinesco, in one of his most recent papers, points to the close analogy between neurofibril changes in hemiplegia and paraplegia, and those seen after nerve section.[4]

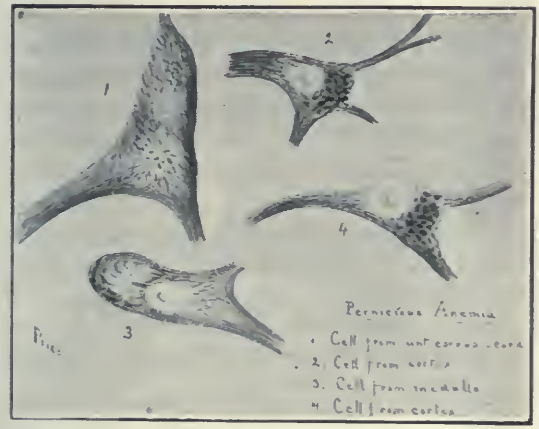
In studying neurofibril changes from another point of view, we find that the lesions may be diffuse, or limited to an occasional cell. Thus the maximum degree of distribution is found in senile insanity, paresis, and Landry's paralysis. In the last named, Marinesco states that he failed to find a single cell of the cord remaining intact. On the other hand, the lesions in precocious insanity, as observed by Marchand,[5] are less diffuse, cells normal or nearly so, being found side by side with cells containing but the debris of the fibrils.

Postmortem changes closely resemble other degenerative lesions, but do not include pigmentation. They soon make their appearance, therefore material for examination should be obtained as promptly as possible, certainly not later than 12 to 18 hours after death.

The conditions which are capable of causing pathologic change in the cytoplasm may also be considered as the etiologic factors of neurofibril lesions.

It is possible for neurofibrils to repair from the stage of granular disintegration, but when actual granular degeneration is reached, with loss of continuity of the fibrils, recovery is impossible.

Like every new stain or method, much was claimed for, and expected of the study of neurofibril lesions, which has failed of realization. On the other hand, it has proved to be of marked value, and deserves a place side by side with other more generally used methods.



The field of research along this line is a broad one, and much still remains to be done.

Among stains bringing out the neurofibrils are the silver methods of Cajal,[6] Bilschowsky,[7] Robertson,[8] and Lugaro[9] and the thionin method of Donaggio.[10]

The following is a report of my cases.

CASE I.—*Pernicious Anemia.*—A. W., male, white, aged 69 was admitted to the Philadelphia Hospital, November, 1905, with the history of a gradually increasing weakness which commenced two years before admission.

He presented no unusual clinical features. The lowest hemoglobin estimate obtained during his stay in the hospital was 25 percent, and the lowest erythrocytic count was 1,500,000. He was delirious for over a month before his death, at first at intervals, later continuously. The postmortem findings were those characteristic of the disease.

Neurofibril changes. In the cortex were diffuse lesions, almost every cell being pigmented, with some degree of granular or fragmentary degeneration of the fibrils. The pigment was pale in color, although the extracellular fibrils had taken the silver stain deeply. In the cord and medulla many cells showed areas of degeneration about the nucleus, characterized by a widening of the meshes of the fibrillar network, with fragmentation and separation of fibrils in the center of the area. These spaces had a somewhat yellowish tint as contrasted with the rest of the cell.

The cerebellum was not examined.

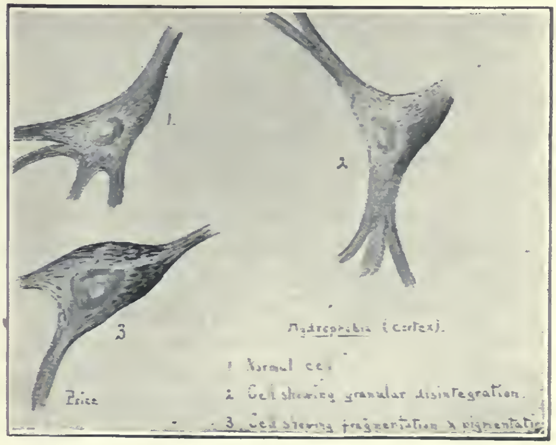
CASE II.—*Hydrophobia.*—W. T., male, white, aged 25, was admitted to the Philadelphia Hospital in January, 1905. This patient had been bitten on the hand by a rabid dog 6 or 7 weeks prior to his admission.

When admitted, he was wildly excited, vomiting, frothing at the mouth, threatening violence to attendants, refusing food and medicine. He had convulsions, hallucinations and illusions. Death occurred 10 hours after admission. The postmortem examination revealed no lesions of the viscera capable of having caused his death.

Dr. Rosenberger, from the clinical laboratory of the Philadelphia Hospital, reported finding bodies resembling Nigri bodies in the cells of the medulla.

Neurofibril Changes.—In the cortex the majority of the cells show some degree of degenerative change, varying from granular disintegration to fragmentation or complete disappearance of the fibrils. There was considerable pigmentation and vacuolation was observed in a few of the cells.

In the cord and medulla many cells presented hypertrophy of the fibrils. In cells of the fascicular type, could often be seen four or five hypertrophied fibrils traversing the cell, while the rest of the fibrils would be pale and atrophic. In a few cells of the reticular type, parts of the network would show hypertrophy—usually near and encircling the nucleus. In the cerebellum the cells of Purkinje presented vacuolation, almost every section showing cells so affected, some


1.
2
3
Hydrophobia (cortex).
1 Normal cell
2 Cell showing granular disintegration.
3 Cell showing fragmentation & pigmentatio
Price

containing two or three vacuoles. The fibrils appeared unbroken, but stained poorly. There was marked pallor of the nucleus and nucleolus.

The fusiform hypertrophy of neurofibrils, described by Cajal and Marinesco as occurring in rabies of dogs and rabbits, was not observed in any of my preparations.

They also make no reference to vacuolation as occurring in rabies, although Marinesco has observed that lesion in tetanus, speaking of it as an achromatolysis, and believing it due to a wearing out of the cell from hyperactivity.

I would also call attention to the similarity of the lesions seen in cells of the cord and medulla in the case of pernicious anemia, with those reported by Ludlum as occurring in paresis.

Review.

Neurofibrils appear normally in all nerve cells, their dendrites and axones.

They undergo change in pathologic states whenever the chromatophilic substance is altered, the change, as a rule, bearing a direct relation to the extent of the chromatophilic alteration.

Lesions of the neurofibrils have the same etiology as lesions of the chromatophile.

Their alterations consist of pallor, granulation, fragmentation, atrophy or hypertrophy—any of which may be partial or general.

At the present time we have found no neurofibril changes so characteristic of any pathologic condition as to be considered pathognomonic.

The study of neurofibril changes is of value in determining the degree of pathologic alteration of nerve cells, and is worthy of more general use.

In closing I wish to express my indebtedness to Dr. B. F. Stahl and Dr. R. D. Patterson for the privilege of reporting the cases, and to Dr. R. C. Rosenberger for the pathologic material and report.

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FOREIGN BODY IN THE CRYSTALLINE LENS, EXTRACTED BY THE ELECTRIC MAGNET.[1]

BY
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The high character of the work done by fellows of this college and the number of papers read on the subject before the Section on Ophthalmology would seem to preclude for some time to come further communications unless the authors have something new to present. Injuries to the eye by foreign bodies are so frequent and their treatment so interesting that additional histories of cases must prove instructive and possibly entertaining.

Marked progress has been made in the treatment of these patients even since 1902 when Haab and others discussed the question at the meeting of the Section on Ophthalmology of the American Medical Association. The extremely accurate and scientific methods of localization before determining on the kind of operation for extraction have been generally adopted in America at least. In Germany the sideroscope of Hirschberg is more popular. In dealing with nonmagnetizable foreign bodies the latter is of course useless. In the Inaugural Dissertation by Franz Hornstein of Tuebinger University is the report of 65 cases of injuries to the eye by splinters of copper and brass. Of these, 33 were in the posterior part of the eye yet in not one was the rontgen ray used for diagnosis. Of the different methods of localization the rontgen rays appeal to me as the most reliable. Moreover they have the additional advantage of permanency of record. Obviously not all cases require localization. Foreign bodies in the anterior chamber or entangled in the iris, or in the lens and occasionally in the posterior part of the ball may be seen by the aid of the magnifying glass or the ophthalmoscope but when the site is unknown or the actual presence uncertain the rontgen rays are invaluable. The form of magnet to be chosen for extraction is largely a matter of choice. The employment of the small hand-magnet should be limited to foreign bodies in the anterior chamber. For those in all other situations the Sweet magnet answers every purpose. Whether the body should be extracted through the original wound of entrance or through a new opening in the coats of the ball depends upon circumstances of site and time. Those lying in the lens or anterior to it should be drawn through the original wound, or, if this is closed, through one made conveniently near; those posterior to the lens are as a rule more readily extracted and with less damage to the eye when drawn through a new opening in the sclera. The question has been largely discussed with the result that operators have agreed to differ.

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[1] Read before the Section on Ophthalmology, College of Physicians, Philadelphia, January 16, 1906.

The case I wish to report is the following:

A woman of 35 while attempting to loosen the lid of a box by pounding the head of a hatchet with a hammer received an injury to the left eye. Within 24 hours of the time of the accident I found a delicate linear scar at the junction of the upper and middle thirds of the cornea opposite the upper pupillary margin, a punctured iris and a swollen and partially opaque lens. I thought I could see in the lower inner quadrant of the lens near the posterior capsule a metallic reflection which I supposed to be the offending piece of steel. A skiagraph, taken at once by Dr. Sweet, located the steel partly in the lens and partly in the vitreous lying horizontally and about 4 mm. in length. The eye was moderately congested, sensitive to light, and vision reduced to the perception of large moving objects. Under antiseptic precautions and cocain anesthesia removal was safely accomplished. The operation was divided into 2 stages. First. The magnet was cautiously approached toward the cornea in the line with the presumed passage of the body, until it was three-fourths of an inch distant, when the steel fragment was raised from its bed in the lens and drawn, accompanied by lens matter, into the anterior chamber. The current was now cut off and the steel dropped into the bottom of the chamber. Second. The cornea was opened in as near as possible the line of the scar, the blunt tip of the magnet applied to the opening, the current turned on and the steel extracted. The greater part of the cataractous lens was expressed through the corneal cut without loss of vitreous and the eye bandaged. Two days later the patient was allowed to go to her home. According to the last report of her attending physician she had a low grade of iritis, probably induced by the traumatism and by the retention in the anterior chamber of a small mass of lens matter.

In conclusion I wish to draw attention to a source of fallacy in the localization methods by the rontgen rays which I think has not been mentioned. The diagrams are made and the inferences therefrom calculated for emmetropic eyes and applied to eyes that may measure several millimeters more or less in their axial or meridional diameters. For example, the wounded eye may be highly myopic. In the case of such eyes the operator may be led into believing that a foreign body lies in the coats of the eye or even in the orbit when its real site is in the vitreous chamber, and conversely, in excessively hyperopic eyes the body may be located in the coats of the eye or in the vitreous when it lies externally to the ball. Or, as in my own case, no allowance having been made for the swelling of the lens following the retention in the lens of a foreign body, the localization scheme may show that the body is in the vitreous when it is really in the lens and the operator may decide upon extraction through the sclera rather than through the cornea. Instances in which errors from these causes are significant must be very few but since they may happen and occasionally be of importance it is well that they be borne in mind.

STATIC ELECTRICITY IN GENERAL PRACTICE.

BY
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It has not been such a long time since the static machine was regarded rather in the light of a scientific curiosity, and franklinic electricity was seldom if ever used as a therapeutic agent. As a student I attended various clinics without seeing a practical demonstration of its use; however, time has wrought many changes in its construction and extended its field of usefulness, until now it constitutes one of the most valuable resources at the command of the physician for the successful treatment of many and varied types of disease. The invention of the machine can be traced to a remote period of antiquity, and from the records we learn that the first electric machine was constructed in 1672 by Otto von Guericke of Magdeburg. According to the written description it must have been very crude, as it consisted simply of a globe of sulfur mounted on a shaft, turned with one hand and pressed against the other. Later the sulfur was replaced by a glass cylinder. About 80 years later, Winkler used horsehair cushions for rubbers, and in 1760 Ramsden constructed a machine in which he used circular glass plates instead of cylinders.

All forms of the static machine as we are familiar with it today are practically modifications of that of Ramsden. These machines developed electricity by the friction of the opposed surfaces rubbing against each other and is known as static franklinic, or frictional electricity. The invention of the electrophorous machine by Topler and Holtz, at about the same time, applied a new principle for the generation of static electricity, and while in the earlier models the current was generated by friction of the opposed surfaces rubbing against each other, in the later models it is generated by inductive action.

It is interesting to note, in tracing the history of static electricity, that it was the only form recognized in the early system of electrotherapeutics; but after the introduction of galvanism and faradism, its use was abandoned for a long time. The reason for this seems to have been due to several causes, chief among which was the inability of the operator to localize or control the current, from a lack of precise methods for the determination of the dosage, and the uncertainty of action of the crude machines then in use, being dependent on atmospheric conditions for their successful operations. These objections are no longer valid, and the progress of time has witnessed the finished product of the skilled mechanic, until now the static machine has reached a degree of refinement and completion, that with proper care and attention will make it available for work under any and all conditions of weather.

The term electricity being of general signification includes a variety of manifestations, from the high voltage and magnitude of atmospheric electricity with its destructive action, to the static current with its enormous voltage or pressure and very small volume.

The full range of physiologic action of franklinic electricity has not been elucidated and many problems await further experience and investigation for their solution. Extended study along this line should be productive of results. It is characterized chiefly by its influence over the functions of the nervous system and also on the functions of nutrition as well. Administered in the form of general electrification the action is manifested by a mild stimulating and invigorating effect on the vasomotor nerves. It first causes a constriction of the arterioles, with a corresponding limitation of the vascular supply, and this is followed by vasomotor dilation with increased activity of the circulation, made evident by the increased heat of the bodily surface and the diaphoretic action on the skin. Having the same action over the cellular constituents of the tissue it promotes metabolic changes and thereby exercises a marked influence over the function of nutrition and promoting constructive metamorphosis. It is a sedative to the vascular system, quieting the heart's action and equalizing the circulation. Acting in this manner it becomes a valuable remedy for the relief of congestive conditions and the promotion of a healthy circulatory action in various inflammatory changes in the organs and tissues of the body.

It has a well marked anodyne action on the peripheral nerves and the marvelously prompt manner in which the pains of neuralgia yield to its influence is one of the wonders of electrotherapeutics. When it is given in the more active form, as the spark for instance, the effect is much more pronounced. The sensory nerves are irritated and blistering of the part will follow if the application is localized and too long continued and instead of a refreshing and invigorating effect being evident marked depression of the vital powers follows. This method of application is apt to be very painful and unpleasant, unless it is used with care and chiefly for this reason the spark is not used so frequently in electrotherapeutics, but in properly selected cases it is a potent agent for good.

When it is desired to obtain an intense action on deepseated tissues the irritant action of the spark by increasing the vascular supply to the surface, relieves congestion by a derivative action and thus constitutes a valuable agent for the treatment of deepseated inflammations.

The approved technic of the different forms of application are sufficiently described in modern textbooks on electrotherapeutics so that a recapitulation of them here is unnecessary.

The utility of this agent covers a broad range in therapeutics and many and varied are the manifestations of the disease in which it gives promise for producing brilliant results that circumstances rarely fail to justify. Having such a potent influence over the functions of the nervous system we may reasonably expect it to produce prompt and curative results in perversion and abolition of the functions of the spinal nerves, and the celerity with which these results are accomplished is one of the marvels of electrotherapeutics.

The record of the following case will be sufficient to establish its value in this connection.

A young man presented himself for treatment, suffering from sciatic neuritis of several months' duration and probably of rheumatic origin. From previous unsatisfactory experience with this class of patients, when treated by drugs, I was led to believe it to be a very intractable form of disease, and more particularly so in this case when I learned that he had been given a full course of medication without any curative results. When first seen he walked with a pronounced limp and there was apparent shortening of the limb, due to muscular spasm. The nerve was hyperesthetic throughout its whole extent with atrophy of the muscles on the posterior aspect of the thigh. He was treated with general electrification and the application of the vacuum electrode over the course of the nerve for 25 minutes and the treatment repeated twice weekly. The result was all that could be hoped for, relief followed the first application, and at the expiration of five weeks the function of the limb was completely restored.

The result was equally satisfactory in another case.

This patient was a middle-aged lady with neuritis of the musculocutaneous nerve, of two months' duration. During this time she lost rest and flesh in consequence of the severe suffering. The pain was described as a severe burning and aching of the forearm with numbness of the fingers, and there was considerable atrophy of the muscles with corresponding loss of power in the hand. The treatment was the same described in the preceding case and it was administered three times weekly for two weeks, then twice weekly for three weeks. The patient secured a good night's rest after the first visit, the first for two months, and continued improvement resulting in a cure followed. During treatment she gained in weight and was much benefited in general health.

From the foregoing evidence, the conclusion seems inevitable, that for the treatment of inflammatory conditions of the peripheral nerves, static electricity gives more promising results than any other form of treatment and promises results that are unsurpassed by other treatment.

The same holds true in the management of the different forms of neuralgias, both peripheral and visceral.

Hysteria, with its protean manifestations, a very rebellious form of disease to manage, and one for the cure of which the entire field of therapeutics has been searched for a specific in vain, is successfully combated and in many cases it will yield to the potency of static electricity.

I believe it to be of value in the treatment of mental disturbance and in one case of acute delusional insanity in which I used it, the appetite improved, the insomnia which was very marked was cured and improvement of the mental condition with disappearance of the delusions followed.

It will ameliorate the pain of posterior spinal sclerosis and lessen the crises, while it has a specific action on chorea; and for restoring lost nerve force in neurasthenia, it has no superior among the multiple forms of treatment advocated for this disease. The paralyzed limbs from the cerebral palsies can be made to respond to the stimulating influence of the static induced current after the electric irritability of the muscle has been abolished, and it has proved its worth in restoring the lost power and stimulating the development of the atrophied structures in infantile paralysis. Therefore, every child with shrunken and shriveled limbs should have the benefit of this remedy before they are pronounced hopelessly incurable.

Muscular rheumatism is a commonplace ailment and sufficiently familiar to every practitioner, but we all know by experience how rebellious it is to treatment, in many instances; and when the unfortunate one is completely disabled with the form known as lumbago, the suffering is very severe. I have had excellent results in treating this class of patients with the Morton wave current applied to the back for 15 minutes and supplemented by drawing sparks from the affected part with the ball electrode. I believe this treatment to be as near a specific for the complaint as anything may be, and I have frequently had strong, muscular, and robust men come into the office, with backs bent and unable to move the spine without excruciating pain, and after giving them treatment, have the satisfaction of affording them complete relief, to be followed in many cases with a cure after one application.

A large percentage of human ailments depends on disordered function of the stomach, and in patients suffering from gastrointestinal catarrh who have made the rounds of all the doctors and been satiated with drugs, there is no remedy within the range of my knowledge that will produce the results that can be obtained with franklinic electricity. Under its use the appetite will improve, the function of the bowels will be restored and the general tone of the nervous system will be raised, the latter result being most desirable for the successful management of this class. I append the report of a case that proves this contention in one case of this nature:

Mrs. S. consulted me with the following history: Several years ago she suffered from pelvic peritonitis, the attack confining her to bed for several weeks. She has suffered severe pain and soreness over the abdomen ever since. The trouble had been diagnosed as peritonitis, salpingitis, and appendicitis and operation advised, but to this she would not consent. The suggestion that she give electricity a trial was readily acceded to. She was given a weekly treatment in the form of general electrification and the application of the vacuum electrode over the whole abdominal region. She made a steady and progressive gain from the start. Her appetite improved and a gain of weight was noticed, together with a restoration of the normal tone of the nervous system. Some curious results were observed during the treatment of this patient. After the first treatment the amount of mucus discharged from the bowels was increased but it gradually diminished after each visit and finally ceased altogether. On one occasion after being treated she passed a large number of round worms. This was very surprising to me and I could only explain it on the supposition that during the condition of charge all of the tissues of the body were electrified and the parasites were directly influenced by the current. This theory I am going to submit to a practical test by trying it for the expulsion of tape-worm, in the next case that presents.

I have also been pleased with the result obtained in relieving the pain and soreness of gastric ulcer and bringing about a general improvement of all the other symptoms, by a course of general and local treatment. In a recent case, the patient, who was a female with an ulcer of five years' duration, had been given all the approved drug treatment without result. Suffering was so severe that she was becoming melancholic from pain and loss of rest, and the resort to the hypodermic becoming frequent, I tried electricity as a last resort. Partial relief followed from the first and after a few weeks marked improvement in the general health was evident.

Either alone or in combination with medication these cases can always be ameliorated by a course of electric treatment. I have obtained the best results with the static discharge followed by the application of Snow's vacuum electrode, and I think this latter form of administration, particularly, is attended by a soothing and anodyne effect of the whole system that aids in restoring the normal tone of the nervous system, a very essential end for and one most desirable in the management of gastric disturbances.

It possesses inestimable value for the number and variety of uses to which it may be put, as an auxiliary in the practice of surgery. The brush discharge will stimulate healthy granulations in chronic ulcerative processes, and under its influence a varicose ulcer will heal promptly, the edges will soften quickly and healthy granulations will rapidly spring up over the surface. At the present time I have under treatment a young man with a traumatic ulcer on the fibular side of the leg that has resisted all other forms of treatment. The sore is 2½ inches long by 2 inches broad and the edges are indurated and undermined. The center is a mass of necrosed tissue. I have only given him three treatments but the result is apparent. The sloughs are being cast off and healthy granulations are shooting out over the surface. The pain was mitigated after the first treatment, and I am confident of my ability to effect a cure in a short time.

For softening down the induration that often remains around the edges of an epitheliomatous ulcer after its destruction with the rontgen ray, the brush discharge is very potent.

The Morton wave current will hasten the absorption of effusion in tuberculous affections of the joints, and in one case of tuberculosis of the knee-joint for which I tried the rontgen ray I failed to get much improvement until after using this current, when improvement became very noticeable, the stiffness and soreness subsided and the diameter of the joint was reduced one inch in the course of one week. I now use static electricity in this condition in conjunction with the rontgen ray with satisfactory results.

It constitutes a valuable force in the management of gynecologic cases, and gives us an ideal treatment for the variety of nervous manifestations that are so prominent a feature in the complaints of women. It allays the pain and irritation dependent on inflamed ovaries and has a curative action on pelvic congestion. It will also stimulate the development of the pelvic organs in those cases in which these organs fail to develop with other parts of the body. This fact is proved by the regularity and freedom of the menstrual flow that follows its use.

Its powers for good are also shown by its curative action in the neuroses of those who have suffered ablation and mutilation of the organs of generation by the surgeon's knife, those who have been operated on until there is nothing remaining to be removed, and who proudly relate for your edification the number of operations they have submitted to as they pass on their rounds from one doctor to another. Far be it from me to attempt to detract from the curative results of judicious and conservative surgical methods, but many operations are unjustifiable in their conception and much regret and subsequent suffering might be spared the patient if milder means were used for the amelioration of their symptoms. Many pelvic exudates can be softened down and made to undergo absorption by a course of electricity in combination with other means; at any rate it is worth a trial in such cases. It will give brilliant results in dysmenorrhea and for the nervous symptoms that attend the climacteric period it may be looked to in confidence of its power for good.

Surpassing results follow its use in some of the various forms of skin disease. It softens the indurated and thickened skin in chronic eczema and improves the nutrition, thereby accelerating the cure of the disease, and it is one of the most efficient agents for relieving pruritus, and in the more rebellious forms of disease it should be given a trial. In treating lupus by the rontgen ray the effect of the remedy is enhanced by using the brush discharge in combination. Some forms of the disease are very rebellious to the rontgen ray alone and the action can be intensified and the cure hastened by using the two forces in combination.

I have had happy results in treating arthritis with Morton's current and in these conditions it will prove its worth. In organic disease of the heart it acts by toning up the nervous and muscular tissue of that organ and restoring a better condition of the circulation; general improvement of the bodily health follows. It stimulates and invigorates the failing vitality of senile adolescence and contributes much toward making the declining years comfortable.

The noise and confusion of a static machine in operation are rather terrifying to some individuals and it becomes necessary to use tact for the purpose of allaying their fears and gaining their confidence, but after this is accomplished the rest is easy, and your patients will leave satisfied after their treatment and feel that they are going to receive benefit. It is a matter of common experience that most people have unlimited confidence in the boundless power of electricity for accomplishing wonderful results and it is not very often that this confidence is misplaced. Aside from the direct and curative influence of the force, the magnitude of the machine and the awe-inspiring influence of the varying phenomena which it produces, make a most profound mental impression on the patient, thus constituting a potent factor in the management of many conditions. In conclusion I might state that I have been using static electricity in my practice for four years and increasing experience is enlarging its possibilities for usefulness in my general practice.

STATE CARE OF THE INSANE IN NEW YORK.[1]

BY
FREDERICK PETERSON, M. D.,
of New York City.
Ex-President of the New York Commission in Lunacy.

It is a singular turn in the wheel of Fortune that a stranger should come here to say a word to Philadelphians upon the humane care and treatment of the insane. Your city was the first in the United States to preach the gospel of sickness for these unfortunates and the first to practise the doctrine. It is over 150 years since Philadelphia established a hospital for the insane—and a *hospital* for mental disorders was a long step in advance at that period.

Nearly everywhere in Christendom the insane were treated as criminals, with whips and chains and prisons. Dr. Rush of Philadelphia was the Pinel of America. He abolished whipping as a remedial measure for insanity, and he discarded manacles and chains.

The first insanity legislation in the State of New York, fifty years after the establishment of your hospital for the insane, provided that lunatics might be admitted to a department of the New York Hospital. This department, twenty years later, received the name of Sloomingdale, still a brand of the New York Hospital and a private retreat. But the insane poor of the whole State were cared for in a county almshouse, and when their numbers warranted it separate county asylums were constructed for their custody. Until 1836, all of the insane of the State, both acute and chronic cases, were compelled to go to such county institutions. The new era for the insane began with the establishment in 1836 of a State hospital for the acute and recent cases at Utica. It is needless to go over the stories of hardship and suffering that led to the creation of this small center of relief. The great mass of the indigent insane were still left in the custody of the county poorhouse authorities. In 1865 popular demands for reform were met by the creation of another State institution, the Willard Asylum for the Chronic Insane. Subsequently to this, movement for State care widened, and hospitals were established at Poughkeepsie, Middletown, Buffalo, Binghampton, Ogdensburg, and Rochester. Various counties fought the progress of State care, but the indignation of the people over the dreadful stories of the sufferings of the insane in the county asylums finally prevailed. There were tales of hunger and cold and darkness, overcrowding in cells and attics, of lack of medical care, of pauper attendants, of foul wrongs to unprotected women, insufficient fire protection, and to cap the climax the burning of nine inmates of the Chenango County Poorhouse and Insane Asylum in a fire which destroyed the buildings in 1889.

By 1894 there were only two counties still permitted by law to care for their own insane, and these were Kings and New York, providing for the insane of the two largest cities in the State. These were investigated that year by the Lunacy Commission and by 1896 all the indigent insane of the State were finally placed under State care. The 14 State hospitals and the 23 private retreats for the insane were all under the jurisdiction of a State Commission in Lunacy, consisting of three persons, a physician, a lawyer, and a business man. These private retreats are supervised and inspected, and licenses to care for the insane may be revoked on failure to comply with the regulations of the commission. This body has not only supervision over the State hospitals but the entire management of the expenditures for the maintenance of the patients and the construction of new buildings. The old idea of 60 years ago of separate provision for the acute and chronic patients was long ago abandoned, and all of the State hospitals are socalled mixed asylums receiving both classes of patients.

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[1] Read before the Philadelphia County Medical Society, Jan. 24, 1906.

With the undertaking by the State of the care of the indigent insane there has been progressive improvement in methods, and I doubt if there is anywhere a system more satisfactory. The following brief summary of such changes, which will afford a contrast to the old county methods, may interest you.

There are training-schools for nurses in all of the State hospitals, women nurses are employed in many male wards. A central pathological institute or school of psychiatry has been established at Ward's Island in the New York City asylums to which all the assistant physicians from the various hospitals of the State go for instruction in the latest scientific methods of study and treatment of the insane. This is under the directorship of a distinguished pathologist, Dr. Adolf Moyer. Most of the hospitals have staffs of consulting physicians from neighboring cities and towns. A woman physician, and a salaried dentist and oculist are required at each hospital. Every hospital is now well equipped with hydrotherapeutic and electrotherapeutic apparatus, surgical operating-rooms, solariums and everything needed in the way of medical and surgical instruments and appliances. Patients are sent for by the hospitals, nurses of the proper sex and often a doctor being delegated for this purpose. Emergency commitments are now in force, so that speedy access to hospital care is afforded in urgent cases. Restraint by means of straps, straight-jackets, etc., has been almost wholly abandoned. Some wards in each institution have unbarred windows and unlocked doors the open-door system. Occupations for the patients have been multiplied and the work of the able-bodied in shops, gardens, fields, etc., have come to have a distinct monetary value. The wards and rooms have been made more and more attractive by furnishings, pictures, birds, libraries, games, and musical instruments. Religious services are held regularly by salaried chaplains, and there are all sorts of indoor sports, entertainments and recreations. Special tuberculosis hospitals have been constructed at several of the county asylums. Several of the hospitals have small colonies at a distance from the main hospital, to which convalescent patients may be sent for change of air and scene. For instance, the Rochester Hospital has such a resort on the lake shore 18 miles away.

Yet with all that has been done the ideal to which the State is working has not yet been attained. Many of the buildings are now old, and many were constructed in the old monastery style of architecture, dating from the use of abandoned monasteries abroad for the insane, when Europe awoke to the need of separating the insane from the criminals. Hence special pavilions for the particular treatment of the acute and curable cases are being constructed at each hospital. And this ideal requires furthermore the establishment of socalled psychopathic hospitals in the large cities, located as are general hospitals, in the centers of population, so that speedy access may be insured. And general hospitals should in the smaller cities set aside pavilions or wards for at least the temporary detention and treatment of emergency cases. Such a pavilion has already been in existence for some years at the Albany General Hospital, and this has given a remarkable demonstration of its usefulness.

The State has appropriated $300,000 to construct on Manhatten Island, New York City, a psychopathic hospital, to act as a distributing center for the insane of all classes and conditions in the metropolis. The necessities of a great city long ago gave rise to a pavilion for the emergency cases of insanity at Bellevue Hospital in New York City, and at the Kings County Hospital in Brooklyn. Some 2,500 patients yearly pass through the Bellevue pavilion; this Bellevue pavilion has three resident physicians who have been trained in the State hospitals and who give all their time to this work.

A great city should have several emergency pavilions of this character. Even with the proposed new psychopathic hospital to be built and maintained by the State in New York City, there will still be need at Bellevue Hospital and perhaps at other of the city hospitals in Harlem and The Bronx, of pavilions or wards for emergency cases of insanity, for despite our present fair provision for urgent cases, many still go to jails and station houses. This is of course true of every county in the State, but it is also true of New York City.

Our aim is to provide all through the State just such emergency hospitals to which patients supposed to be insane can be at once taken, not only for observation, custody, and diagnosis, but also for immediate treatment, so that no time will be lost in assisting them to regain their health.

Medical Mortality in America.—During 1905 the deaths of 2,045 medical practitioners in the United States and Canada were announced, a death-rate for the year of 16.36 per 1,000, a proportion which does not materially differ from that in previous years, the corresponding rate for 1904 having been 17.14; for 1903, 13.73; and for 1902, 14.74. The age at death varied from 23 to 104 years, the average being 61. There were 62 deaths under 30, and 103 over 70, 239 over 80, 23 over 90, and 2 over 100. The extreme limits of years of practice varied between the year of graduation and 75 years, the average being a little over 31 years. Eleven died in their year of graduation; 6 had been in practice more than 70 years, 65 more than 60 years; 303 more than 50 years; and 629 more than 40 years; in 706 cases, or 34.52 percent of the total for 1905, no explicit cause of death was stated. Of those in which the cause of death was stated, "heart disease," 202 deaths, as in previous years, heads the list. Cerebral hemorrhage, which includes most of the deaths ascribed to "paralysis" and "apoplexy," caused 153 deaths, pneumonia 141, tuberculosis 102, nephritis 100, senile debility 80. Typhoid fever claimed 41 victims; malignant disease, 34; septicemia, 28; appendicitis, 27; paralysis, 25; influenza, 24; uremia, 122. Accidents were responsible for 72 deaths, of which 19 were due to poisoning. In 53 cases death followed surgical operation. Under the head of suicide are 46 cases.

SPECIAL ARTICLES.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.

Proceedings Reported by the Secretary,
WILLIAM J. GIES, Ph. D.,
of New York.

The sixteenth meeting of the Society for Experimental Biology and Medicine was held in the new building of the Rockefeller Institute for Medical Research, on Wednesday, April 18. The President, Simon Flexner, was in the chair.

Members present.—Atkinson, Auer, Beebe, Buxton, Calkins, Dunham, Emerson, Field, Flexner, Foster, Gibson, Gies, Herter, Lee, Levene, Lusk, Meltzer, Meyer, Murlin, Noguchi Opie, Parker,[1] Pratt,[1] Salant, Schwyzer, Sherman, Terry, Wolf, Wood.

Members elected.—Charles R. Bardeen, G. H. A. Clowes, N. B. Foster, J. H. Kastle, Ralph S. Lillie, D. T. MacDougal, J. J. R. Macleod. Robt. M. Yerkes.

Abstracts of Reports of Original Investigations.[2]

On the Digestion of Gelatin.—P. A. Levene and W. A. Beatty.

A complete separation of all aminoacids arising on hydrolysis of proteins was effected with the aid of phosphotungstic acid. On hydrolysis of gelatin by means of strong hydrochloric acid, glycocole, alanin, leucin, aspartic and glutamic acids, phenylalanin, prolin and oxyprolin, and a few substances of undefined nature were obtained. On tryptic digestion a substance of the composition $C_7 H_{10} N_2 O_2$ was isolated. On further hydrolysis this substance yielded prolin and glycocole. The substance was evidently prolinglycyl anhydrid.

The Reactions of Amphioxus to Light.—G. H. Parker.

When strong light was thrown into a basin of sea-water containing many amphioxus, the whole assembly swam about in wild confusion. This has been taken to indicate that amphioxus is very sensitive to light. But when 20 individuals were illuminated singly only 12 responded. The wild confusion in the first experiment is due quite as much to tactile stimulation as to light. When a strong, well-circumscribed beam of light was thrown on the tail of amphioxus the animal almost always reacted by a slight forward spring. When the light was thrown on the middle of the body there was usually no reaction, though sometimes a backward movement. When the light was applied to the head end, there was always a backward spring. This sensitiveness was not lost or impaired by cutting off the anterior end including the so-called eye-spot. When cut into halves amphioxus retained sensitiveness to light in the anterior half, but not in the posterior half, though the latter was normally reactive to stimulation from very weak acid. This indicates that though amphioxus is without a brain proper, the anterior portion of its medullary tube is related to the posterior portion somewhat as the brain and cord are in the higher vertebrates. The distribution of the sensitiveness of amphioxus to light corresponds to the distribution of the "light" cells (Hesse) in its medullary tube and is probably not connected with the skin. Specimens of amphioxus tend to collect in the darker parts of an aquarium. They also swim away from a source of light. Amphioxus is therefore negatively photodynamic and negatively phototropic.

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[1] Non-resident.

[2] The authors of the communications have written the abstracts. The secretary has made occasional abbreviation in some of them.

The Relation of Blood Platelets to Thrombus Formation.—J. H. Pratt.

In frogs and rabbits experimental thrombi three to ten months old were studied. In the youngest thrombi there was agglutination of blood platelets or spindle cells and agglutination of erythrocytes without evidence of fibrin formation. The fusing and distortion of the erythrocytes was marked. The erythrocytes were sometimes broken up into small granular masses which simulated blood plates. By the use of a sodium metaphosphate solution is was possible to distinguish the blood platelets from the degeneration products of the erythrocytes.

Conditions of Bacterial Activity in the Intestine in Cases of Advanced, Apparently Primary, Anemias.—C. A. Herter.

The author here reports results of the coordinated studies of 15 cases of apparently primary advanced anæmias, in ten of which the blood picture was that of pernicious anemia. The studies related to the occurrence of phenol in the urine and in the feces; of indol in the feces and indican in the urine; of skatol in the feces; to the Ehrlich aldehyd reaction of the urine; to the Ehrlich aldehyd reaction of the feces; and to the hydrobilirubin reaction of Schmidt. In the case of indol, phenol and skatol, quantitative studies were made. The observations established the fact that in socalled primary, pernicious and allied anemias the indications of excessive putrefactive decomposition are almost regularly pronounced. These changes are associated with definite and characteristic departures in the bacterial activity of the intestinal flora studied in fermentation tube experiments. A careful study of the microscopic fecal fields, of the sedimentary fields in fermentation tubes, of the anerobic plates from the sterilized feces, and of the results of a modification of Welch's incubation test for the gas-bacillus, indicates that in nearly every instance examined the peculiar Sacchus-butyric type of bacterial decomposition here found is dependent upon *B. welchii* (*B. aerogenes capsulatus*). Evidence is furthermore brought forward to show that this organism is a prominent and perhaps specific factor in advanced "primary" anemia. The overgrowth of the gas-bacillus is associated with a partial disappearance of *B. coli.* During convalescence the gas-bacillus recedes numerically and *B. coli.* resumes a dominant position.

Absorption of Typhoid Bacilli from the Peritoneal Cavity.—B. H. Buxton and J. C. Torrey.

Shortly after injection of typhoid bacilli into the peritoneal cavity of a rabbit the organs in most experiments are found to be invaded by the bacilli, more particularly the liver and spleen, in which there may be enormous numbers. By means of injection of lamp black, the peritoneal path for this rapid rush to the organ is shown to be by way of the anterior mediastinal lymphatic trunks. Even in five minutes after injection the trunks and the anterior mediastinal lymph-node are markedly blackened.

On plating out the lymph-nodes after injection of typhoid bacilli, they are often found to contain many millions of bacilli, and as a general rule if there are many bacilli in the lymph-nodes there are also many in the organs.

The Dicrotic Elevation at Different Points of the Arterial Tree.—A preliminary communication. Percy M. Dawson. (Presented by J. R. Murlin.)

In a number of dogs the form of the pulse-wave was studied by means of the Hürthle manometer. The arteries upon which the observations were made were the following—aorta, brachio-cephalic, innominate, carotids, thyroids, vertebrals, internal mammaries, axillaries, brachials, left subclavian, celiac axis, superior mesenteric, left renal, inferior mesenteric, left iliac, deep femoral, femoral, saphenous and peripheral end of the carotid, i.e. a side branch of the circle of Willis. The exact values of the apex and base of the pressure triangles were determined from readings of the systolic and diastolic pressures obtained by means of a valved manometer.

A careful study and comparison of the results has led to the following conclusions.

1. In passing from the heart to the periphery the

dicrotic elevation increases in distinctness and in the special case of the aortico-femoral system the dicrotic elevation occurs lower on the catacrotic limb of the fundamental wave. On the other hand as the arteries decrease in size, the dicrotic elevation soon disappears, e.g. in the thyroid, saphenous and so forth. Consequently there is in every system of arteries (aortico-femoral, brachiocephalic and left subclavian) a region lying somewhere between the aortic arch and the periphery in which the dicrotic elevation is maximal.

2. In the aortico-femoral system the side-pulse shows a maximal dicrotic wave between the origin of the renal and that of the deep femoral artery; in the brachio-cephalic system, between the origin of the carotids and that of the vertebral or thyroid artery; in the left subclavian system the dicrotic wave is less pronounced in the mammary than in the vertebral artery and consequently the maximum in question must lie central from the origin of the former artery. In the case of the end-pulse, the region of the maximal dicrotic wave is in or peripheral to the brachial, femoral and carotid arteries but it is impossible to say whether the maximum occurs in them or peripheral to them, because they were the most peripheral of the arteries examined in this connection.

3. In the femoral pulse-wave the dicrotic elevation is normally much more distinctly marked and begins much lower on the catacrotic limb of the fundamental wave than is the case with the carotid pulse.

4. Certain operative procedures (namely determination of the blood-pressures in various deep seated arteries after opening the thoracic or abdominal cavity) cause the predicrotic notch in the femoral to become more and more pronounced so that ultimately the dicrotic wave appears as an elevation on the ascending limb of the fundamental wave which immediately follows. In the case of the carotid pulse this effect of operation is very rarely seen. As yet the writer is unable to offer any satisfactory explanation of these local variations in the character of the dicrotic elevation. He has however begun an investigation with the view of elucidating this question.

The Influence of Subcutaneous Injections of Dextrose upon Nitrogenous Metabolism.—Frank P. Underhill and Oliver E. Closson. (Presented by William J. Gies.)

It has been frequently assumed that the large quantity of sugar present in the body in the condition of diabetes is responsible in part for some of the characteristic symptoms noted. For example, it has been asserted that various acids or acid derivatives may be formed giving rise to the condition of acidosis, as indicated by the well-known increased output of ammonia by diabetics. What influence the large quantity of sugar may have upon the distribution of nitrogen in the urine has received but scanty attention, especially with accurate methods.

Recently Scott (J. Physiol, 28. p. 107.) has attempted to imitate the condition which obtains in diabetes by injecting into dogs large quantities (seven grams per kilo) of dextrose subcutaneously, and has made a study of the distribution of the urea, non-urea, and ammonia nitrogen as compared with the distribution in the normal animal. He has shown that when the above mentioned quantity of dextrose is injected there is an increased protein metabolism. Further there is probably excreted an increased output of ammonia combined with an acid or acids derived from the decomposition of the dextrose. There is also a diminution in the proportion of nitrogen eliminated as urea and an increase in the output of the non-urea nitrogen.

It was the purpose of the present investigation to study the character of this non-urea nitrogen. Accordingly the total nitrogen, urea nitrogen, ammonia nitrogen, kreatinin nitrogen, uric-acid nitrogen, and purin nitrogen have been determined under conditions similar to those of Scott. Similar to the results of Scott the authors found an increase in the total output of nitrogen due to increased metabolism, together with an increased elimination of oxalic acid. In no case, however, was a significant change in the proportion of the various forms of nitrogen to be observed.

The discrepancies between the two series of results can be accounted for in part by the fact that most of Scott's dogs were suffering from severe cystitis due to catheterization. It is well known that cystitis is sufficient to give rise to an increased excretion of ammonia at the expense of the urea. It is therefore concluded that subcutaneous injections of large quantities of dextrose do not give any evidence of toxic action, that is, of an acidosis, as advocated by Scott.

The experiments suggest that the subcutaneous injection of large quantities of dextrose may be useful as a method of parenteral feeding, since quantities up to seven grams per kilo in the dog and rabbit may be given without the appearance in the urine of more than the merest trace.

Diffusion into Colloids and a Biological Method for Testing the Rate of Diffusion.—Simon Flexner and Hideyo Noguchi.

Certain experiments on the destructive action of bile and bile salts upon the pancreas made by Flexner indicated that colloidal substances restrained the action of the salts. It was suggested that this restraint probably depended upon a reduction in the rapidity of diffusion of the salts into the tissues. The studies of Voigtlander on the influence of colloids (agar-agar) on the rate of diffusion of certain crystalloids tended to show that diffusion into agar-agar jelly takes place at about the same rate as into water. The experiments summarized in this report were made with hemolytic substances suspended in isotonic saline solution and in agar-agar and gelatin jelly. The rate of diffusion could be measured by the depth and degree of hemolysis produced in a jelly containing in suspension susceptible red blood-corpuscles. The experiments were varied. The red corpuscles were suspended in the warm jelly which was permitted to congeal. The blood jelly was overlaid with the hemolyzing agent dissolved in saline solution, or this agent was also contained within a solidified jelly. The hemolyzer was made to diffuse both downwards and upwards according as the blood—or hemolyzer-jelly was above or below. Moreover the hemolyzer was placed in the jelly and made to diffuse upwards into a watery solution, the amount of diffusion being measured by the degree of hemolysis caused by the fluid removed at given intervals. Two factors were always considered: extent or degree of hemolysis, and time.

The substances employed were mineral and organic acids, alkalies, sodium taurocholate, saponin, solanin, venom, and tetanolysin. The results can be stated in general terms as follows:

Acids, alkalies, salts, glucosids, and toxin diffuse into 0.9 percent watery Nacl solution more quickly than into a similar solution containing agar-agar and gelatin. This reduction in rapidity of diffusion increases with increase in concentration of the jelly. Ten percent gelatin exerts a greater inhibition than 2 percent agar-agar, and 25 percent gelatin exerts greater restraint than 10 percent gelatin. The ratio between the rate of diffusion and the concentration of the colloidal suspension is, in the case of gelatin, nearly inversely proportional to the square root of the concentration of the colloid. In the case of agar-agar, with which the possibility of varying the concentration is far less than with gelatin, the inhibitory influence is less marked and does not conform to this rule. Voigtlander's results are applicable to the special case of agar-agar jelly.

The influence of colloids upon the injurious effects produced by bile salts upon the pancreas is due, apparently, to a modification by reduction of the diffusibility of the bile salts, which result diminishes the concentration of the salts brought in contact with the pancreatic tissues in a unit of time.

SEVENTEENTH MEETING.

The seventeenth meeting of the Society for Experimental Biology and Medicine was held in the Laboratory of the Department of Health of New York on Wednesday evening, May 23. The President, Simon Flexner, was in the chair.

Members present.—Atkinson, Auer, Dunham, Ewing, Field, Flexner, Gies, Hatcher, Lee, Levene, Mandel, J. A., Meltzer, Meyer, Norris, Opie, Park, Richards, Salant, Terry, Wadsworth, Wallace.

ABSTRACTS OF COMMUNICATIONS.

Analogies Between the Phosphorized Fats Obtained from the Brain and Kidney.—EDWARD K. DUNHAM.

So much attention has been directed to the protein constituents of protoplasm that it has become usual to regard proteins as the physical basis of life. Relatively recent investigations have, however, indicated that all cells contain complex substances of a fatty or lipoid nature, in which phosphorus and nitrogen are conspicuous elements. Many of these lipoids possess remarkable physical properties. In contact with water or alkaline liquids, they pass into colloidal solution after imbibing large quantities of water with the production of "myelin forms." They also differ from neutral fats in doubly refracting light. Such physical characters and the complex molecular constitution of these lipoids appear to justify the assumption that they, as well as proteids, are essential constituents of protoplasm and that a study of living matter must include the consideration of these compounds of the fatty acids.

The phosphorized fats, or lipoids, which have been most carefully studied have been obtained from the brain,[1] but even as derived from this source, where they are believed to be present in relatively large amounts, their constitution and mutual relationships have not been clearly established.

During investigations of alcoholic extracts of kidneys, the writer has been led to infer that substances closely related to the lipoids derived from the brain may be obtained by similar methods from the kidney, and the purpose of the present communication is to report a few representative analyses from among those upon which the inference just stated is based.

Extracts of finely divided renal tissue, freed from obvious fat, made with hot 85 percent alcohol, yield a precipitate, upon cooling, which contains a variety of lipoids, while certain others remain in solution. For convenience, those lipoids which are relatively insoluble in cold alcohol may be classed as the "protagon" group, and those not precipitated on chilling as the "lecithin" group. A preliminary purification of the "protagon" group was effected by treating the crude precipitate with benzol, which left a small residue undissolved. From the concentrated solution in benzol a powdery precipitate was formed upon the addition of a mixture of acetone and rhigolene and became pure white when repeatedly washed with the latter mixture, in which it was nearly if not wholly insoluble. This precipitate was soluble in hot 85 percent alcohol, from which it separated in discoid crystals on cooling the solution. It corresponds in solubilities to Liebreich's "protagon" or to an impure sphingomyelin described by Thudichum, and obtained from the brain. It contains 2.869 percent of phosphorus and 3.126 percent of nitrogen. A portion of this precipitate was dissolved in hot 85 percent alcohol and an alcoholic solution of lead acetate added in excess. The mixture was boiled and filtered while hot. Upon cooling, a heavy, white crystalline precipitate formed. This was removed by filtration and recrystallized from 85 percent alcohol four times. The white crystalline powder so obtained was analyzed. (See Table I, 160 A.) A second sample of the same substance, prepared by the same method from another lot of kidneys, but recrystallized only once, and therefore, less pure, contained nearly the same percentages of phosphorus and nitrogen, allowance being made in the calculations for the 1.77 percent of lead it contained (Table I, 160 B).

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[1] Thudichum: Die Chemische Konstitution des Gehirns des Menschen und der Tiere. Tübingen, 1901.

The solubilities and reactions of this substance correspond to those of the compound which Thudichum calls "sphingomyelin", when it contains, as impurities, small quantities of kerasin and a second cerebroside to which he assigns no name. Upon hydrolysis with barium hydrate, this substance from the kidney yields ammonia, trimethylamine, a substance reducing Fehling's solution, and, apparently an acid forming a barium salt which is insoluble in a mixture of absolute alcohol and ether. These cleavages are analogous to those observed by Thudichum on hydrolysis of his sphingomyelin.

A portion of the lead-free substance, (160 A,) was dissolved in hot 85 percent alcohol and precipitated with cadmium chloride in alcoholic solution. The precipitate was removed by filtration, redissolved in 85 percent alcohol and kept at 30° C. over night. This procedure separates kerasin from sphingomyelin. The precipitate that had formed during the night was rapidly removed with a Buchner filter, pressed, dried and analyzed (Table I, 160 A. $CdCl_2$). The percentages of phosphorus and nitrogen in a second but less pure sample of this cadmium chlorid compound are also given (Table I, 160 B. $CdCl_2$), and, for comparison with these, the results of analyses of "sphingomyelin" and "apomyelin" by Thudichum. He obtained cadmium salts containing 16.86 percent $CdCl_2$ and 26.59 percent $CdCl_2$, and believed that these variations depend upon the relative abundance of compounds containing one and two molecules of cadmium chlorid, respectively; assigning the limits 16.4 percent $CdCl_2$ and 28 percent $CdCl_2$ to these two hypothetical compounds. The percentages of cadmium chlorid found in the similar products from the kidney fall within these limits, and the percentages of cadmium and chlorin are in close accord with the assumption that the cadmium is present as chlorid; indicating that the salt is an addition product.

The acetone rhigolene mixture used in the preliminary purification of the "protagon" group contains substances which possess solubilities similar to those of Thudichum's kephalin and myelin, both before and after precipitation with lead acetate. But these substances have not yet been obtained in sufficient quantity for satisfactory purification. They appear, however, to contain more phosphorus (over 4 percent) and less nitrogen (1 percent) than the analogue of sphingomyelin already considered, and these characters are also in harmony with Thudichum's analyses of kephalin, myelin and sphingomyelin.

From the "lecithin" group, a cadmium chloride compound was obtained which, when purified with ether, acetone and alcohol, resembled the cadmium chloride compound of paramyelin (Thudichum). The percentages of phosphorus and nitrogen in this compound (150 A. $CdCl_2$); in a second sample purified but once with ether and acetone (150 B. $CdCl_2$) and in Thudichum's paramyelin from human and from ox brain are given in Table II.

Still other compounds containing phosphorus, nitrogen and fatty acids have been obtained from the renal extracts, and appear to be analogous to substances derived from the brain. But since all these compounds require much further study before their constitution, relations to each other and to substances originally present in the tissues can be understood, it is believed that this preliminary report need not be burdened with further, necessarily incomplete analytical data.

The Toxicity of Indol.—A. N. Richards and John Howland.

Previous observers have shown the comparatively slight toxicity of indol, large amounts having been fed to dogs with no resulting symptoms.

A series of experiments on rats, guinea pigs and rabbits have shown that if the capacity of the cells of utilizing oxygen is diminished as by potassium cyanid, or chloroform, the intensity and duration of symptoms following the injection of definite doses of either indol or phenol are increased.

Experiments on dogs have shown that if potassium cyanide is given together with indol (0.25–0.5 gm.) by subcutaneous injection, a series of symptoms result which ends after a period of days with the death of the animal. The symptoms consist of stupor and delirium, loss of power over limbs, exaggerated reflexes with spasticity of hind limbs, hypersensitiveness in lumbar region, especially the tail, loss of sight, constant nausea, feces diminished in amount and bloody, and emaciation. Autopsy showed marked congestion of the mucosa of the duodenum, ileum, and colon, blood in the intestinal contents, degenerative changes in the liver, excessive cerebrospinal fluid, and softening of the brain-tissue.

TABLE I.

	160 A	160 B	160 A $CdCl_2$	160 B $CdCl_2$	SPHINGOMYELIN[1]		APOMYELIN
P	2.493	2.48	3.690	3.623	3.24		3.23
N	2.869	2.74	2.896	3.211.	2.96		3.00
C	63.57		67.546		65.37		67.01
H	11.84		12.445		11.29		11.35
$CdCl_2$			25.380	25.362	16.86	to	26.59

TABLE II.

	150 A $CdCl_2$	150 B $CdCl_2$	PARAMYELIN CADMIUM CHLORID.[2] Human Brain.	 Ox Brain.
P	4.348	4.156	4.78	4.313
N	2.219	2.219	2.25	2.029
$CdCl_2$	25.99	24.34	24.95	21.275

Comparable results have been obtained when prolonged chloroform anesthesia or prolonged asphyxia has been substituted for the cyanid. In one experiment an intestinal fistula of the Thiry-Vella type was established in a dog and complete recovery from the operation allowed. On poisoning with potassium cyanid and indol, the latter could not be detected in the urine but was found in the contents of the isolated intestinal loop. Urinary examinations in the various experiments showed that diminished oxidation lessens the intensity and prolongs the duration of the indican reaction in the urine.

The experiments were made as a part of a study of the etiologic factors in recurrent vomiting in children. At the beginning of these seizures there are signs of diminished oxidation (increased elimination of uric acid, neutral sulfur, lactic acid, acetone bodies) and an abnormally intense indican reaction. It is believed that failure to oxidize completely substances of the type of indol, results in the production of distinct mental symptoms and in the partial excretion of the substances into the gastrointestinal tract. The disturbance induced by such substances is capable of producing nausea and vomiting.

The Formation of Urea.—L. B. STOOKEY and A. S. GRANGER. (Presented by R. A. Hatcher.)

Subcutaneous injection of liver-extracts (dog) was found to lead, in the dog, to an increased elaboration of nitrogenous end-products into urea. Liver extracts which have been heated to 55° C. were not found to possess this stimulative action. These results might indicate an enzymatic formation of urea. Further experiments are in progress.

The Effects on Embryonic Development of the Röntgen Rays Acting on the Spermatozoa of the Toad Previous to Fertilization.—C. R. BARDEEN.

The first physiologic effect of the Röntgen rays noted was the burning of the human skin. The alterations in the bloodvessels found in the skin of man and the lower animals after exposure to the rays led to the idea that the effect is primarily on these vessels. Experiments with developing ova showed, however, that development is hindered after exposure to the rays at a time preceding the development of the bloodvessels. Experiments with planaria likewise showed that regeneration in these nonvascularized animals may be prevented by exposure to the rays. The growth of plants, like that of animals, may be inhibited. Actively growing tissues are especially susceptible. That the rays do not directly stop the process of mitosis is evident from the fact that this process can go on while the tissues are being exposed. The idea that the action of the Röntgen rays, and the physiologically similar rays of radium, is due to alterations brought about in intracellular nutritive substances, especially lecithin, was advanced by Schwarz on the basis of the effect of radium on the hen's egg and has received some support.

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[1] Thudichum, l.c., p. 170.

[2] Thudichum, l.c., p. 153.

Experiments have shown that spermatogenesis may be inhibited by exposure to the Röntgen rays or radium. The direct action of the rays on the spermatozoa has not, apparently, been studied. It occurred to the author that it would be interesting to see if spermatozoa could be injured by the Röntgen rays and, if so, what the effect would be on the development of ova fertilized by spermatozoa thus injured. During the short breeding season of the toads in the vicinity of Madison, Wisconsin, the author collected daily several pairs of toads, separated the males from the females, and from the males got enough sperm to make a slightly cloudy suspension in water. This suspension was divided into two parts, one of which was kept for control while the other was exposed for from an hour and a half to two hours and a half to Röntgen rays. Several of the females were then opened, until, when possible, one was found in which the eggs seemed abundant and ready to be discharged. Two short strings of eggs were removed and each string was divided into two parts; one part was placed in the control dish, the other in that which had been exposed to the rays. After about fifteen minutes each string was placed in a separate dish of water.

Several of the experiments proved of negative value either because not even the spermatozoa of the control dish proved capable of fertilizing the eggs, owing to the time which had elapsed since the removal of the sperm from the male, or because none of the females happened to have ova in the right condition to be fertilized. The thoroughly successful experiments, owing to the short season of mating, were few in number but they were convincingly positive. All eggs fertilized by the control spermatozoa developed normally. Only one egg out of between fifty and a hundred that were fertilized by the exposed spermatozoa, developed at all normally. All the others showed marked defects in development.

The results of the experiments may be briefly summarized as follows:

1. The spermatozoa of the common toad retain power of movement and fertilization for from one-half to nearly three hours in a dish of lake water at room temperature. On hot days they die sooner than on cool days.

2. Spermatozoa when under exposure of Röntgen rays die sooner than when not thus exposed.

3. When spermatozoa are exposed to the rays so long that very few are capable of fertilizing ova, the eggs thus fertilized usually do not develop into larvas but they may do so

4. When spermatozoa have been exposed for a considerable period to the Röntgen rays and yet are still capable of fertilizing a considerable proportion of eggs placed in the same dish the eggs seem to develop normally at first, but beyond the gastrula stage the development becomes retarded and the resulting larvas are markedly deformed. These deformities are quite varied. In one larva for instance, a considerable part of the central nervous system and the gills were undeveloped on one side while the abdominal viscera were developed only on that side. In another the central nervous system was abnormal on both sides and the alimentary canal quite defective. Considerable further study is necessary to determine accurately the nature of all the abnormalities present in the various monsters the author has preserved. Apparently all are defect abnormalities.

From the results obtained it may be concluded:

1. That nuclear material may be so influenced by exposure to the Röntgen rays that after a latent period it will call forth marked abnormalities in development.

2. That injury to spermatozoa capable of fertilizing ova may cause the development of monsters from the ova thus fertilized.

A Vago-esophageal Reflex.—S. J. Meltzer and John Auer.

The general knowledge of the contractions of the esophagus is confined to the peristaltic movements, that is, the consecutive contractions of the successive parts of the esophagus following a normal deglutition, or, as it was described by Meltzer at a previous meeting of this society, after an injection of liquid or insufflation of air directly into the esophagus. A simultaneous contraction of the entire esophagus can be produced only by stimulating the peripheral end of the vagus when cut in the neck.

The authors discovered that in dogs a tetanic contraction of the entire esophagus can be caused also by reflex ways. When the vagus is cut in any part of the neck, an electric stimulation of its central end causes a prompt longitudinal and circular contraction of the entire esophagus, which lasts as long as the stimulation continues. Particulars and other interesting facts connected with this observation will be reported later.

Ion Protein Compounds, with Exhibition of Products.—William J. Gies.

About five years ago the author found that "when the electric current is passed through neutral or alkaline mucoid solutions (consisting of sodium or calcium salts of mucoids) turbidity results within a short time and flocks eventually form and can be filtered off." This observation was included in a preliminary report of work then in progress.[1] About the same time Huiskamp had been making similar observations in connection with salts of nucleoprotein from thymus.[2] Shortly afterward, in preparing material for work in another connection,[3] the author precipitated from an alkaline solution (Na_2CO_3) of mucoid, with the aid of acetone after failure with alcohol, a water-soluble compound—apparently sodium mucoid. This fact has not been published hitherto, although it was stated at that time that organic compounds, such as gelato-mucoid, had been obtained.[4]

The author has lately prepared calcium, sodium, potassium and ammonium salts of mucoid by the following process: The glucoprotein was obtained in slightly alkaline solution. This solution was dialyzed until neutral and then was poured into a large excess of 95 percent alcohol, by which treatment the mucoid was immediately precipitated. Initial purification was effected by resolution, dialysis and reprecipitation. The products were rendered anhydrous by treatment with absolute alcohol and ether. Probably all bases yield such salts, although the author confined his remarks to salts of inorganic hydroxids.

The comparatively pure inorganic salts of the mucoids thus prepared are light, snow-white powders. They dissolve in water very readily and are dissociable products. The concentrated solutions resemble mucus. The aqueous solutions are neutral to litmus and acid to phenolphthalein. Ammonium compounds have been prepared that were acid to litmus also. The calcium salt yields about 12 percent of ash, whereas the corresponding mucoid is practically ash free. It is very probable that the mucins in the secretions occur in the form of such salts as Muller has already suggested. Yeast nucleoprotein has already yielded similar products. Pesumably other nucleoproteins will do so also.

The author believes these observations clear the way for important discoveries connected with the glucoproteins, nucleoproteins, proteinates and similar protein products. Numerous studies in this connection were suggested in the oral communication to the Society and are proceeding with the cooperation of the workers in the author's laboratory. The best method of preparing the compounds referred to has not yet been definitely ascertained, but the author hopes to describe it in detail at an early date.

Some Facts Showing that the Brain Educts Termed Phrenosin (1874) *and Cerebron* (1900) *were Practically the Same.*—William J. Gies.

In a discussion of the chemical heterogeneity of protagon, the author previously alluded to the probability that phrenosin and cerebron were identical.[1] Thierfelder recently published in rejoinder some opinions to the contrary.[2] Reexamination of the facts in the case have convinced the writer that Thudichum's phrenosin, Gamgee's pseudocerebrin, Parcus' cerebrin, Kossel and Freytag's cerebrin, Thierfelder's cerebron and Koch's cerebrin were practically the same. The slight discrepancies among the figures for percentage elementary composition were probably due to slight proportions of inevitable impurities in each product.

Of the products referred to, phrenosin and cerebron have been subjected to the most thorough study. The descriptions of each are in close harmony. Each has been found to yield, on hydrolysis with dilute sulfuric acid, apparently the same proportions of a sugar (galactose), a nitrogenous base (sphingosin) and a peculiar organic acid. The following data were obtained on direct analysis of the acid product

	C	H
"Neurostearic acid" . . . . (obtained by Thudichum from phrenosin).	75.94	12.64
"Cerebronic acid" . . . . (obtained by Thierfelder from cerebron).	75.33	12.50

If the inevitable impurities in each product are disregarded it seems obvious that the names refer to the same substance.

The following formulas were assigned to it:

Thudichum's product (Neurostearic acid)	$C_{18}\ H_{36}\ O_2$
Thierfelder's product (Cerebronic acid)	$C_{25}\ H_{50}\ O_3$

It is apparent, however, that the formulas are practically interchangeable. Each is empirically an approximate multiple of $C_8H_{17}O$. With this fact in mind the following equations that were given to represent the relation of the cleaverage products to the mother substance, emphasize the opinion that phrenosin and cerebron were the same:

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[1] Mead and Gies: American Journal of Physiology, 1902, vi (Proc. Amer. Physiol. Soc., 1901, p. xxviii); also Gies and collaborators: Biochemical Researches, 1903, i, p. 53.

[2] Huiskamp: Zeitschrift für physiologische Chemie, 1901–'02, xxxiv, p. 32.

[3] Gies: Loc. cit., 1903, viii (Proc. Amer. Physiol. Soc., 1902, p. xliii); Biochemical Researches, p. 54.

[4] Gies: Loc. cit. Also, Posner and Gies, American Journal of Physiology, 1904, xi, p. 404.

[1] Posner and Gies: Journal of Biological Chemistry, 1905, i, p. 59.

[2] Thierfelder: Zeitschrift für physiologische Chemie, 1906, xlvi, p. 518.

$$\underset{\text{Phrenosin}}{C_{41}\,H_{79}\,NO_8} + 2H_2O = \underset{\text{Neurostearic acid}}{C_{18}\,H_{36}\,O_2} + \underset{\text{Sphingosin}}{C_{17}\,H_{35}\,NO_2} + \underset{\text{Galactose}}{C_6\,H_{12}\,O_6}$$

$$\underset{\text{Cerebron}}{C_{48}\,H_{93}\,NO_9} + 2H_2O = \underset{\text{Cerebronic acid}}{C_{25}\,H_{50}\,O_3} + \underset{\text{Sphingosin}}{C_{17}\,H_{35}\,NO_2} + \underset{\text{Galactose}}{C_6\,H_{12}\,O}$$

A Simple Electrical Annunciator for Use in Metabolism Experiments, and in Connection with Filtration, Distillation and Similar Operations, with Demonstration.—William H. Welker. (Communicated by William J. Gies.)

In the paper describing his cage for metabolism experiments[1] the writer referred to the advantages of the "sliding shelf" devised as a holder for the urine receiver, and, in that connection, made the following remark: "The shelf also favors the use of electrical apparatus to ring out the time of elimination of urine-fractions, in experiments in which fractions of the urine must be examined separately and immediately after their natural excretion" (page 407). This remark alludes to one of the several additional devices the writer has contemplated perfecting for use with the cage described.

In order that an annunciator might be of the greatest service in metabolism work in the way already indicated, and also to insure its usefulness for filtration, distillation and other operations in which the weight of a product above a certain maximum amount could be relied upon to close an electrical circuit and announce the delivery of the material, it was necessary that it should be delicately responsive to the weight of several grams and yet be readily adjustable within relatively wide limits in that respect, also that it should be light in weight and of small compass but durable, and resistant to derangement from any cause, and that it should hold, without risk to or modification of the contents, any suitable vessel placed upon it.

At the writer's request, Mr. Welker, who has exhibited in this laboratory unusual proficiency in handling electrical apparatus, devised an annunciator to meet these requirements and has perfected an apparatus that is eminently satisfactory for all the purposes contemplated.

The annunciator shown to the Society consists of two square boards (4½ x 4½ x ⅜ inch) securely fastened together with a piano hinge on one side, and kept apart by a spring perpendicularly arranged at the opposite side in such a way as to permit a definite pressure to force the surface of the boards together. The spring can be adjusted so as to increase or decrease, within considerable limits of weight, the amount of force (weight) required to bring the boards in contact. In the opposed surfaces of the boards platinum electrodes (plate and points) are so placed that perfect contact between them is effected when the boards are brought together and the circuit is closed. The electrodes connect with binding posts on the hinged side. A small dry cell is used. The entire apparatus including bell attachment, may be placed on a surface 5 x 8¼ inches. The bell employed directly with the apparatus is a small one with delicate musical sound. Its ringing does not disturb the animal. It is obvious, of course, that the apparatus may be connected with a bell in a room some distance from that in which the animal is kept.

In the demonstration it was shown that the apparatus announced the deposit in an ordinary urinary receiver placed on it of volumes of water less than 5 cc. The apparatus may be adjusted to announce a volume as small as 1 cc. and may be made, in larger sizes, to announce the deposit of masses of any desired weight.

Various details of description that would show the particular value of the apparatus in other respects will be omitted here but will be given in the paper soon to be published by Mr. Welker.

Some Observations on the Presence of Albumin in Bile.—William Salant.

The presence of albumin in the bile under pathological conditions has been noticed by several observers. Thus, Lehmann,[1] who examined post-mortem, bile from the gallbladder in 100 cases, found albumin in nutmeg liver, fatty liver, and parenchymatous hepatitis. Pouchet[2] found albumin in the bile of six cases which died of cholera. Among recent observers may be mentioned Brauer[3] who has reported similar findings in typhus and parenchymatous nephritis. Hallauer[1] analyzed the bile in a number of cases. He found albumin in 5 out of 6 cases of cloudy swelling of the liver associated with pneumonia, miliary tuberculosis and sepsis, also in some cases of fatty liver, none in cirrhosis of the liver. Experimentally, in rabbits, he obtained an albumino-cholia after intravenous injection of albumose.

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[1] Gies: American Journal of Physiology, 1905, xiv, p. 403.

[1] Lehmann: Centralblatt für die med. Wiss, 1867, v, p. 172.

[2] Pouchet: Comptes Rendus, 1844, xcix, p. 847, also 1885, c, p. 220.

[3] Brauer: Zeitschrift für physiol. Chem., 1903-'04, xl, p. 182.

Within the past two years several other investigations on the experimental production of albumino-cholia have been described. Brauer[2] in his paper "on the study of the liver", in the Zeitschrift fur physiologische Chemie, reports the presence of albumin in the bile of a dog with a permanent biliary fistula after poisoning with ethyl alcohol and small quantities 3-5 c.c. of amyl alcohol At his suggestion Pilzecker[3] carried out a similar study on the bile of dogs with permanent gallbladder fistula after poisoning with phosphorus and arsenic. His result seemed to corroborate the work of Brauer. Another interesting statement both observers make is this—albumin passes more readily into the bile than it does into the urine. In this connection attention might also be called to the work of Hallauer and Gurber[4] who, after the intravenous injection of casein solution into rabbits, recovered considerable quantities of it in the bile as well as in the urine.

While not disputing the possibility of albumino-cholin under the conditions of the experiments of Brauer and Pilzecker, it seems to me they have not proved that the albumin they found in the bile was eliminated by the liver. It is just as possible that it is due to inflammation of the gallbladder and biliary passages which they observed on autopsy. To minimize the possibility of error from this source a number of experiments were carried out on dogs each of which was under ether anesthesia with temporary biliary fistula. The neck of the gallbladder in each case was ligated previous to the introduction of a canula into the common bile duct. The bile was collected and tested for albumin according to Brauer's[5] method. Either amyl alcohol or ethyl alcohol alone or a mixture of the two was injected into the stomach or small intestines. The bile collected was, as in the controls, tested for albumin.

The results obtained were not uniform Distinct cloudiness on boiling appeared in the bile of one experiment before and after poisoning with amyl alcohol. On the other hand in another experiment the bile remained perfectly clear on boiling before and even after injection of amyl alcohol. After the administration of small quantities of amyl alcohol 5 cc., etc., there was no albumino-cholia. Only after the injection of 20—30 cc. did the bile become distinctly cloudy on boiling after slight acidification with acetic acid. In none of the experiments carried out as indicated were more than traces of albumin found in the bile. One experiment, however, on a dog poisoned with ricin was an exception. The dog received in three days two subcutaneous injections of ricin, 1 mg. per kilo. He was found dead the day after the last injection. The bile removed from gallbladder showed the presence of a considerable quantity of albumin.

It seems probable, therefore, that the albumino-cholia after poisoning with ethyl or amyl alcohol, as observed in animals with permanent fistulas, might have been due to irritation of the bladder and only perhaps slightly to lesions in the liver. The question whether albumin passes more readily into the bile than it does into the urine was also studied. The result in every instance examined showed considerable quantities *of albumin* in the urine after poisoning with amyl alcohol.

CLINICAL NOTES.

POSTOPERATIVE RÖNTGEN TREATMENT IN CARCINOMA OF THE BREAST.

BY

CHARLES LESTER LEONARD, A. M., M. D.,

of Philadelphia.

In a paper in the *Annals of Surgery* for March, Dr. William J. Taylor calls attention to the difficulties in operation consequent upon previous röntgen treatment. The beneficial effects produced seem to have escaped their merited attention and too much stress is laid upon difficulties in operative work, with no allowance for the great benefits that counterbalance them.

The spread of either tuberculous or malignant disease takes place in the majority of cases through the lymphatics. The cases reported by the author of the paper quoted and those who participated in its discussion, show that the röntgen treatment had obliterated the lymphatics and made them impassable to infection.

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[1] Hallauer: Verhandlungen med. physik. Ges., Würzburg, 1904, p. 186.

[2] Brauer: Loc. cit.

[3] Pilzecker: Zeitsch. für physiol. Chem., 1904, xli, p. 157.

[4] Hollauer and Gurber: Zeitsch. für Biol. 1904, xlv, p. 372.

[5] Brauer: Loc. cit.

In speaking of a case of "cystic" disease of the breast in which he performed a Halsted operation, he said: "I could feel that the breast was enlarged and that in the gland there was a swelling which I took to be, and still believe to have been a cyst." Further on, "The breast and both pectoral muscles were removed and the axilla cleaned out." The specimen was subjected to microscopic examination by Dr. Longcope who reported in part as follows: "On section the cut surface discloses opaque white breast tissue, which is slightly larger than normal. It is fairly well circumscribed and has a more or less pyramidal form." "The axillary lymph-glands are small, soft, and pink in color." "Sections are made from all parts of the breast. They show a course network of rather dense fibrillated connective tissue enclosing lobules of fat cells of various sizes. The connective tissue contains extremely few cells. In many sections the acini are lined by two regular rows of cuboidal epithelium which do not differ essentially from the normal, except that many of the cells contain fat droplets. Sections through four of the axillary lymph-nodes show chronic inflammatory changes. There is some hyperplasia of the lymphadenoid tissue with thickening of the reticulum, especially in the lymph sinuses and proliferation of the reticular cells." "The lymph sinuses are converted into *solid cords*."

The picture presented is the one which has been frequently described of fatty and cystic degeneration with an increase of fibrous tissue in carcinoma of the breast treated by the röntgen rays. It matters little, however, to the intent of this paper whether it was malignant or simple cystic disease. The condition was sufficiently grave to demand a radical operation with the removal of both pectoral muscles, the breast and the axillary glands. The only disadvantage from the röntgen treatment was a slightly increased difficulty in operating. There was nothing to show that the treatment had increased growth. On the contrary, fatty, fibrous, and cystic degeneration had taken place, a change that has frequently been shown to follow röntgen treatment of malignant disease.

The change of the most importance, whether the disease was cystic or malignant, was that "the lymph sinuses are converted into solid cords." This fact was confirmed by all who participated in the debate as having been present in their cases.

This result in itself was more valuable than that accomplished by the operation. The necessity for operation had been obviated by the destruction of the lymphatic channels. Where was the necessity for operation? The disease could not spread. If the disease can be localized by the destruction of the lymph sinuses what need is there for facility in operating, and why operate?

The destruction of the lymphatics has been shown to precede any action upon malignant cells by the röntgen rays, and this is because they act first upon the less highly organized cells. The logical conclusion, from the fact established in these cases that "the lymph sinuses are converted into solid cords," should be that the röntgen method should be employed in every case to produce this result, either before the surgeon has laid the tissues open and increased the amount of irritation and the facility for absorption, or postoperatively to lessen the chances of recurrence and metastasis.

If, as in the case cited, the destruction of the lymphatic sinuses and the fibrous, fatty, and cystic degeneration in the glandular structures can be accomplished in 28 ten-minute treatments, it seems as if every case should be given this increased security from metastasis, especially in view of the present statistics as to the mortality and recurrence of malignant disease after operation.

The patient should receive the benefits of both methods of treatment, until one or the other can show absolute proof of a lessened mortality and freedom from recurrence.

MULTIPLE RUPTURE OF THE CHOROID.

BY

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of Kansas City, Mo.

S. V., a white male, aged 28, driver by occupation, was referred to me by Dr. Van Eman, November 29, 1905; he sustained an injury in which there was concussion of the right eye and cheek, also, in lesser degree, of the left eye.

There was a laceration 10 mm. long extending temporally from the right external canthus. The external end of the ciliary bearing margin of the right upper lid, was torn off to the extent of 7 or 8 mm. There was a clean-cut, perpendicular laceration on the conjunctival surface of the upper lid, 12 mm. long, perpendicular, through the conjunctiva and deeply into the tarsal platelet. He was seen by me 48 hours after the injury. The swelling was so great as to render inspection of the ball very difficult. There was extensive subconjunctival hemorrhage, the pupil was irregularly dilated, there were two large welts upon the eyeball which protruded between the lids upon forcibly separating them. The condition precluded an immediate fundal examination.

The contusion and swelling of the lids and adjacent parts, especially over the right malar bone, were very great. There was bleeding of the nose for five days. The left eye presented several subconjunctival ecchymoses which disappeared in the course of ten days leaving the organ with normal vision and normal in appearance.

The patient was kept in bed with antiseptic applications and compresses over the injured parts. In the course of two weeks the swelling and hemorrhages had disappeared and healing of the laceration was complete, although the discoloration of the skin lasted some days longer. The pupil was kept dilated with scopolamin until all danger of iritis was past.

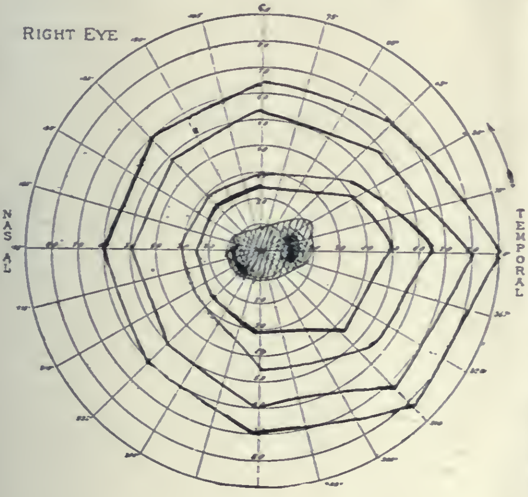

FIG. 1.
Multiple rupture of choroid, eccentric fixation.

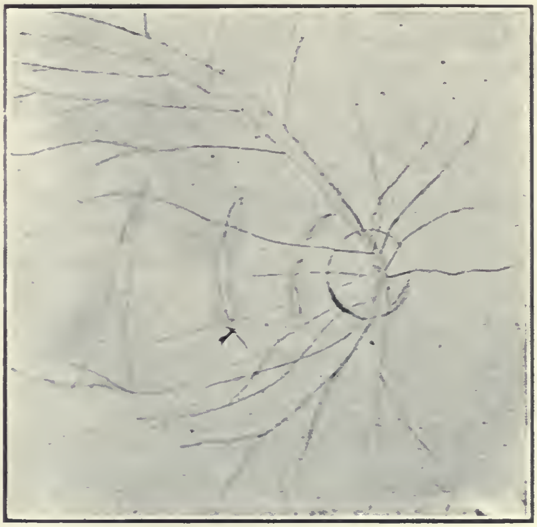

FIG. 2.

When the acute reaction to the traumatism had subsided sufficiently for ophthalmoscopic examination the media were found clear and the fundus of the right eye presented evidence of several ruptures of the choroid, slight hemorrhage, and a little swelling and haziness of the retina. The lines of laceration in the choroid were curved, reddish streaks with a faint yellowish tinge, rather than shining white as usually shown in illustrations. The lacerations were exceptional in that there were four instead of one as is usually the case. They were all in the horizontal meridian, however, and they were all curved to coincide with circles surrounding the disc. The fundus of the left eye was normal.

Vision R. E. 6-60 at this time. Vision, L. E. 6-6. During the third week after the injury and the first week after removing the bandage the patient said the sight of the right eye gradually improved.

A month after the injury central vision with the right eye was *nil*. The peripheral visual field of this eye showed absolute and relative scotomas corresponding to the ruptures in the choroid as illustrated in Fig. 1. Otherwise the field was normal as to boundaries for form and for colors, Fig. 2. On January 1, 1906, the redness and haziness of the fundus had disappeared. The lacerations no longer looked like yellowish-red streaks but had become glistening white with sharp cut edges. As yet no pigment deposits had formed on their margins such as usually characterize lesions of this kind sooner or later. There was a narrow, glistening, white tracing on the margin of the disc at its inferior nasal aspect and extending around about one-sixth of its circumference. It was suggestive of a solution of continuity at this place and is unique in my experience. The deposit of pigment at the lower temporal margin of the disc probably antedates the injury.

The retina is very rarely torn by ruptures of the choroid and this case is no exception to the rule as shown by the regular course of the retinal vessels over the lacerations. The sclera is always found intact at the site of these injuries. One or more of the short ciliary arteries are sometimes torn and cause small areas of atrophy of the choroid, as first explained by Siegrist.

This case is one to which may be applied the theory of Becker, that when the eyeball is struck it is forced backward and the optic nerve is driven into the ball, causing the retina and choroid to be thrown into a fold or series of folds concentric to the nerve. The choroid gives way at the turn of the fold producing the characteristic concentric rupture. Becker's theory is not applicable to all cases, however, as sometimes, though rarely, the choroid shows one or more lacerations over irregular areas in the region of the posterior pole. The change from the yellowish-red color of the early stage to the white color of the late stage and permanent condition is explained by the gradual absorption of the exuded lymph and extravasated blood which being cleared away, leaves the bluish-white sclera in view. The foregoing case is an example of a rare form of the disease, as generally but a single rupture occurs which is located between the disc and the macula without serious consequence to vision.

The behavior of the vision is somewhat paradoxic, as at first it improves, as the retinitis subsides, until partial or complete recovery is made; then later, the vision is again lost, and this time permanently, as the retina separates during cicatrization. This was strikingly witnessed in the case described.

In this case the pupil was not affected but in some cases it becomes permanently dilated and loses both the direct and the consensual reaction to light. These are probably the cases in which the nerve is so injured as to become atrophic and theophthalmoscope should reveal a white, atrophic papilla. The remarkable case of rupture of the choroid, reported by Hutchison and Little, of extensive and slowly progressive pigmentation of the fundus, until the condition approximated that of choroiditis, is suggestive of specific disease as the main etiologic factor, rather than traumatism, which may have been merely incidental and not causative.

The complications of rupture of the choroid are optic neuritis, optic atrophy, rupture of the sclera, cataract, dislocation of the lens, prolapse of the ciliary, prolapse of the iris, rupture of the sphincter, iritis with consequent irregular pupil, iridodialysis with resulting double or multiple pupil, hemorrhage into the vitreous, hemorrhage into the perichoroidal space, detachment of the retina and detachment of the choroid. Choroidal hemorrhage may be distinguished from retinal hemorrhage by remembering that the former is lighter in color and pinkish while the latter is darker, almost to blackness.

In this case no complications were encountered but the vision was none the less surely destroyed by one line of rupture crossing the macula.

DIGEST OF LITERATURE.

EXOPHTHALMIC GOITER.

BY

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of Philadelphia.

Exophthalmic goiter—Graves' disease—Basedow's disease—or Parry's disease—is a malady the chief symptoms of which are prominence of the eyeballs, enlargement of the thyroid gland, rapid heart, and general tremor. Various theories have been advanced to explain the occurrence of the symptoms. Basedow supposed the hematogenic theory, claiming that there was a primary change in the blood, as in chlorosis. Stokes considered that there was a primary disease of the heart muscle itself, while Koben assigned as the cause of the disease a lesion of the sympathetic nerves due to pressure of the thyroid upon the cervical nerves. A disease of the veins was supposed to be the cause by Gros, while Sattler believed that the seat of the lesion was in the vagus and sympathetic. Charcot and Buschan believed that the cause of the disease was an alteration in the ganglion cells of the cortex. Filehnes, Durdifis, and Bienfaits experimentally caused in animals symptoms resembling Basedow's disease, by irritation of the vasomotor centers in the medulla. The thyreogenic theory was first advanced by Mobius. Dana, in a more recent opinion, concluded that the disease was of nervous origin, but that the disease of the thyroid gland gave rise to excessive secretion which in turn is the cause of the symptoms. If the secretion of the thyroid gland is excessive, it gives rise, in his opinion, to nervousness similar to that seen in Basedow's disease, but if the secretion is diminished symptoms resembling those of myxedema make their appearance. This is practically the present view held by neurologists. The opposite view is, however, held by Cunningham and Gley. Mikulicz believes that Graves' disease cannot be explained on the ground that it is due to excessive secretion of the thyroid gland. The goiter, he claims, is not primary, but a part of the symptom-complex.

Distinct advances have been made in the field of therapy in recent years along the lines of organotherapy (milk of thyroidectomized animals, rodagen, myxedema serum, antithyroid serum of Mobius), operative procedures, such as the removal of the gland, exothyropexy, and operations upon the sympathetic nerves.

Organotherapy.—Ballet and Enriquez, Lanz, Burghardt, Blumenthal and Mobius were among the pioneers in introducing this form of therapeutics, and in all cases it was based upon the theory that there was present a hypersecretion of the thyroid gland. Ballet and Enriquez used the serum from thyroidectomized dogs in nine cases, all of whom were, in a general way, improved. The exophthalmus was however, only helped in two of these cases. Lanz was the first to employ the milk of thyroidectomized she-goats under the name of rodagen, and this was also later employed by Burkhardt and Blumenthal. Mobius used the serum of a thyroidectomized calf to which was added carbolic acid. Hallion preferred the total blood to which was added glycerin and this he called "hemato-thyroidin." In his experience the rapid pulse and the tremor were invariably helped but the exophthalmus proved rebellious. Indemans' experience was against large doses of the antithyroidin of Mobius. He preferred the use of small and gradually increasing doses. He states that the results upon the exophthalmus, the tremor and the nervous manifestations were favorable.

In Christen's opinion this form of therapy is symptomatic, but he states that it should be employed in all cases before operation is advised. Peters, Alexander, Schuler and Eulenburg report similar experiences. Lomer employed this therapeutic measure in the case of psychoses occurring during the course of Basedow's disease without good results. Kuh reported 11 cases of exophthalmic goiter, in one of which he used the serum of thyroidectomized animals (Merck), and in the others the liquid, or desiccated serum (Parke, Davis & Co.). The effect in one case was temporary only, and in another the treatment was without influence. The serum treatment he concluded was an excellent palliative, and the improvement in the subjective symptoms was usually striking.

Rodagen is obtained by precipitating the milk of thyroidectomized goats in alcohol. After the fatty substances are removed it is dried, and mixed with an equal amount of sugar and milk. It is found that this substance has the same effect as the milk itself. One hundred and twenty-five grams of this powder is equal to a liter of milk. The daily dose is 5 to 10 grams. It is contraindicated in cases with myocardial changes and secondary changes in the kidneys, and in those cases in which the nerve cells are already affected. According to Burghardt and Blumenthal this preparation has a very favorable influence upon the insomnia, the emaciation, the general weakness, the trembling, and the sweating. The goiter, the exophthalmus, and the tachycardia are only slightly influenced.

Leyden used rodagen in three cases with good results. Christens treated two patients with the milk of dethyroidectomized goats. The improvement was encouraging.

Dreyfus collected 47 cases treated by organotherapy. He concluded, however, that the cases reported have been studied for too short a time to draw any positive conclusions. The blood, as well as the milk, of thyroidectomized animals contains a substance which has—at least in most cases— an influence upon Graves' disease. In what way the action occurs is thus far not explained. The antithyroid serum appears to be more effective than rodagen. Severe heart affections are contraindications for both rodagen and the serum. In most cases the organotherapy improves the general condition. Permanent favorable influence upon the heart is rare. The exophthalmus, the tremor and the sweating in many cases are favorably influenced, in many cases only slightly influenced and often remain completely unchanged. It is Dreyfus' opinion that organotherapy is purely symptomatic in its results, but should be tried in all cases before operation is advised.

S. P. Beebe reviewed the literature of the serum treatment of exophthalmic goiter. He quotes McCallum, who injected emulsions of the thyroid glands of dogs into geese, and then injected the serum of the latter into dogs. Hypothyroidism did not result, although in one case a lesion of the thyroid gland was found. Yates N. Wells prepared antiserum in the same way, but was unable to demonstrate any cytolytic action in vivo. Portis injected into goats (1) crushed glands, (2) crushed glands which had been washed in salt solution, or (3) colloid matter. The serum prepared by the first method produced profound hemoglobinuria. Hemoglobinuria was also caused by the serum prepared by the second method. The reaction caused by the injection of colloid matter was milder and no hemoglobinuria was caused. Slatineano demonstrated changes in the thyroid epithelium by the injection of antiserum, but was unable to demonstrate lesions of chronic sclerosis.

Demour and Van Lint injected guineapigs and rabbits with an emulsion of dogs' thyroids, and claimed that in order to produce the active serum an emulsion of the whole gland must be injected. They claim that when the serum made in this way was injected into dogs intravenously a fatal hypothyroidism always occurred. Murray, in an effort to produce cytolytic serum, fed rabbits on sheep's thyroid extract for a month. He then used the serum of these animals in two cases of exophthalmic goiter and both of them improved, although not to a greater extent than would be expected from treatment by other medicinal methods. Later Murray fed goats on sheep's thyroid extract for a period of two months, and employed the goats' serum in two cases, but while the patients improved, he did not believe that there was any specific action.

Beebe isolated nucleoproteids and thyreoglobulin from the thyroid glands of two fatal cases of Graves' disease, and a mixture of the two proteids was injected intraperitoneally at five-day intervals into rabbits, and these were bled eight days after the last injection. The serum of these rabbits cannot be given as freely as the antitoxin of diphtheria or tetanus. The therapeutic dose is small, and alarming reactions have been seen after the injection of a cubic centimeter. He does not claim that the serum is absolutely specific.

John Rogers employed this serum and some modifications of it in several cases of exophthalmic goiter. The rabbits which had been injected by the nucleoproteid and globulin methods were bled to death at the end of five weeks, and the serum obtained was called Serum A. Serum B was obtained by injecting the dried precipitate of nucleoproteids and thyreoglobulin obtained from the glands of the cases of Graves' disease after they were four months old. Serum C was prepared a month later, while Serum D was made from the normal human thyroid gland. Ten cases were treated, employing Serums A, B and C, and resulting in "three apparently perfect cures, three rescued from a critical condition and now approaching a cure, and the others more or less improved." Rogers states that the objections to this serum are that it takes months to prepare it; the subjects have to be human; and the medicament is dangerous; it must be administered carefully and slowly. The difficulty surrounding the obtaining of normal human thyroid glands in fresh uncontaminated states, or pathological thyroid glands, will make the use of this serum impracticable.

Operations.—Tillaux, 25 years ago, conceived the idea of removing the thyroid gland in Basedow's disease, and in 1883 Rehn claimed that this disease could be cured by operation. Kocher and Riedel believed that every case of exophthalmic goiter should be operated upon, but most surgeons believe that every measure known to the internalist should be employed before resorting to surgical intervention. Dreyfus states that the indications for operation are (1) compression of the trachea by the goiter; (2) cases exhibiting symptoms of acute intoxication without marked enlargement of the thyroid gland; (3) sudden exacerbation of the symptoms, especially the presence of a high-grade exophthalmus; (4) excessive tachycardia, when it is not due to myocarditis; and finally (5) the social indication. Manifestly those who are well-to-do can exhaust all medical measures first. Rehn operated in all acute cases. The danger of the operation lies in (a) the difficulty of the technic; (b) the narcosis; in (c) the lowered resistance after the chronic intoxication that the thyroid substance produces; and (d) in the acute thyroidism resulting from the manipulation of the gland. Postoperative fever is present in the great majority of cases. Dreyfus claims that unfavorable postoperative symptoms may occur, and these consist of transient psychoses, oppression, injection of the face, general tremor, profuse sweating, vomiting, irregular pulse, etc. Kocher believes these symptoms are the result of the absorption of hematoma and postoperative hemorrhages, the blood of which is highly toxic.

Shuttleworth in Toronto reported nine cases of thyroidectomy, with a mortality of two. Charles Mayo reported 40 cases of partial thyroidectomy with a mortality of 15 percent. This mortality is reduced to 10 percent, if two moribund cases are excluded. He advises operation upon all severe types, and all of his cases received rontgen ray treatment from two to six weeks before the operation. When the pulse is 130 and 160, and anemia and edema of the feet are present, he advises a course of belladonna for some days before the operation. Unless the dyspnea is extreme or there is marked exophthalmus, he prefers the use of either as an anesthetic; otherwise subcutaneous injections of cocaine are employed.

Of the cases which recovered from operation 50 percent were free from symptoms of exophthalmic goiter in three to six weeks. In 25 percent of the cases the improvement continued for a year. In 25 percent only partial improvement was observed. In no cases were the symptoms aggravated, and death occurred only in the most severe types of the disease. Acute thyroidism occurred in 24 to 30 cases during the operation. Kocher operated upon 59 patients four of whom died in the first 10 days. Aggravation of the symptoms occurred immediately after the operation in 39 cases. Forty-five patients were cured, and the remainder improved.

Hector Mackenzie considers the risk attending the operation too great to justify it, except under exceptional circumstances. Friedheim reported 20 cases operated upon by Kummell. Of these one died in four years of tuberculosis, 14 remained well, and one died of tetany and collapse in 10 days. In the remainder the symptoms were improved. He claims 75 percent of cures with a mortality of 5 percent. Schmitz reported

20 cases with good results. His cases were examined after 1½ to 11 years.

In Rehn's cases 50 percent were cured, and the mortality was 20.1 percent.

Dreyfus tabulated 127 cases operated upon by Wolff, Mikulicz, Kronlein, Kummell and Kocher. Complete cure was found in 75.7 percent; and death in 7.9 percent. All of the cases reported by Mayer which were operated upon died.

Exophthyroipexy, which was advanced by Poncet and Jaboulay, has now fallen into complete discredit.

Operations upon the sympathetic nerve consist of section of the cervical sympathetic, or tearing out of the cervical sympathetic, partial resection of the cervical sympathetic, and total or bilateral resection of the cervical sympathetic. Of 27 cases with partial, more or less extensive resection of the cervical sympathetic reported by Balacescu, 9 were cured; 11 were helped; in 2 the results were negative, and 5 died. Later Balacescu reported 17 cases in which total bilateral resection of the cervical sympathetic was done with 10 cures, 5 improvements, and 2 negative results. Marques concluded from a study of the statistics that the results are inconsistent.

Rontgen Ray.—George Murray employed the rontgen ray in one case of exophthalmic goiter without relief. He quotes Beck who also employed the rontgen ray on the other half of the gland which remained after an operation, with good results, but it was impossible to decide whether the results were due to the operation or to the rontgen ray. Stegman used the ray on 13 cases, and states that the results were successful. The goiter was diminished, and the subjective symptoms improved.

Radium.—Robert Abbe reported a case of exophthalmic goiter in a woman of 21 which was treated by the application of radium. Abbe inserted a glass tube containing 10 centrigrams of Curie's radium into an incision made in the hypertrophied middle lobe of the thyroid, and allowed it to remain for 24 hours. The wound healed without any unusual symptoms. For a month the gland was a little more swollen and spongy, after which the swelling gradually diminished, and the husky voice and other unpleasant symptoms disappeared also. Four months later she showed some symptoms of tachycardia, although she felt entirely well, and was free from tremor and restlessness, was able to attend to her household duties, to play tennis, and to walk several miles. The thyroid gland was a sixth of its former size. No other treatment than the application of the radium was used in this case.

The value of any new therapeutic measure is difficult to estimate from a study of the literature. The cases are frequently reported in such a way as to leave doubt in the critical mind as to the conclusions drawn by the author.

In many instances the cases have been under observation too short a time to be valuable from a statistical view-point. This is especially true of the more recent therapeutic measures that have been suggested for the relief of exophthalmic goiter, and to which reference has been made above. It is doubtful in the mind of the reviewer if the results obtained in the treatment of Graves' disease by the organotherapy are more encouraging than those obtained by the usual well-recognized therapeutic measures.

However, the use of the serum of thyroidectomized animals (goats or calves) if the contraindications are observed, is free from objectionable sequels, and should be employed therefore, in the cases which prove rebellious to treatment by rest, the application of electricity, the use of the ice-bag and certain drugs. But no marked relief of the exophthalmus or the goiter should be expected from the use of the serum, although reports are uniform in ascribing to its use the rapid relief of the subjective symptoms.

The real value of the serum in these cases could be estimated with greater exactness if the effect of the measures which are used in conjunction with the serum treatment could be limited. This is difficult and often impossible to determine from the literature, on account of the imperfect manner in which many of the cases are reported.

Should Operation Be Advised In Cases Of Graves' Disease?—Before answering this question the mortality of Graves' disease, per se, and the prognosis of Graves' disease when treated by the usual methods, must be taken into consideration. Mobius quotes the statistics of several authorities upon the first question, as follows: Buschan, in a study of 900 cases, estimated the mortality at 11.6 percent; Dusch placed it at 12.5 percent; Von Graefe placed it at 10 percent, McKenzie, at 12.5 percent, and Charcot at 25 percent.

In reference to the prognosis of Graves' disease the statement made by Gowers (Diseases of the Nervous System, p. 89) shows clearly how indefinite our views are on this question. He states: "In few diseases of equal severity and corresponding apparent gravity is the prognosis so uncertain or do so few cases end fatally under observation." I believe that the experience of most neurologists supports this view. Dana believes that over half the cases "reach a fairly comfortable condition of improvement" if properly treated. Osler is more pessimistic, believing that recovery is rare when the disease is well developed. There is a tendency, in a certain percentage of cases, toward recovery although not often until a lapse of several months or years. Even in the most severe cases, in which there is extreme exophthalmus with mental excitement, intense jachtation, alarming tachycardia, insomnia, and extreme emaciation, the prognosis is fairly good for life, and partial relief, at least.

In comparison to this the statistics of Mayo, who operated upon 40 cases with a mortality of 10 percent should be examined. Only in 50 percent was there moderate improvement in 3 to 6 weeks. In 25 percent improvement continued for a year, and in 25 percent only partial improvement was observed. In Rehn's cases only 50 percent were cured, and 20 percent died. In 12 of the tabulated cases by Dreyfus 75 percent were cured, and there was a mortality of 7.9 percent. It must be admitted that these tables are encouraging as to cure, if the statistics of the results can be depended upon. But the mortality is high, and while it has been stated that only the more severe cases succumb, one cannot escape the thought that at all events the milder cases tend toward spontaneous recovery.

Is one justified in advising an operation, the mortality of which is between 8 percent and 10 percent, and for the cure of a disease, the mortality of which is between 11 percent and 25 percent, and which, in many cases, tends to amelioration, or entire subsidence of the symptoms? If this question is answered in the affirmative it must be for selected cases only. Operation upon the thyroid gland seems justifiable in cases threatened with a fatal termination, and in which the symptoms resist all other known therapeutic measures; or, in those cases in which the subjective symptoms are so painful and disturbing on the one hand, and so persistent on the other, that the patient is willing to run the risks attending such an operation to obtain relief.

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Yellow fever is again reported in Mississippi, three cases being held under quarantine at a government station midway between New Orleans and Mobile.

THE CEREBROSPINAL FLUID IN THE TERTIARY PERIOD OF SYPHILIS.

BY
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Experimental work may give rise to very important clinical applications and lumbar puncture is among these. In syphilitics particularly it furnishes us with very important results. It may put the clinician on the track of commencing nervous localization, and thus warned, the physician may immediately proceed with the required treatment. This is a truth that Widal and his followers have demonstrated and a new contribution has recently been given the medical profession by Doctor Paul Ravaut.

Lumbar puncture shows no indication of lymphocytosis in the cerebrospinal fluid in all syphilitic manifestations. The cutaneous, mucous and bone lesions, even when extensive and very persistent, do not bring about any reaction, but one, however, should make an exception in instances of perforation of the palate which appears to be frequently accompanied by a lymphocytosis of the cerebrospinal fluid. As to ocular lesions they more frequently coexist with decided reaction of the cerebrospinal fluid and these are all the more intense the more recent the lesion; they decrease as the lesion retrogresses and disappear when atrophy supervenes. If, however, when the ocular lesions which have arrived at this last stage are accompanied by a reaction of the cerebrospinal fluid, another interpretation imposes itself, because the lymphocytosis becomes a symptom of a nervous manifestation undergoing its evolution and has been pointed out by Babinsky and Nageotte.

The subjective nervous symptoms, such as headache, vertigo, peculiarities in the character, and mental disturbances, coexist frequently with reactions taking place in cerebrospinal fluid, and this peculiarity is occasionally of a great clinical help.

One may hesitate in the diagnosis between psychic disturbances belonging to a neurasthenic condition, for example, or of symptoms relating to pathologic changes in the brain. Lumbar puncture would seem to allow one of coming to some distinct conclusion, because a lymphocytosis will not be present in neurasthenia, but will be evident in cases of pathologic conditions of the brain.

The treatment will naturally differ in the two cases, because a neurasthenic must not be treated by mercury, or, on the contrary, to treat a syphilitic as if afflicted with some ordinary nervous lesion. Unless a lumbar puncture has been done it is frequently quite impossible to give a decisive opinion and it is easily conceived to what irregularities in treatment such uncertainty of diagnosis will lead to. In old cases of syphilis the cerebrospinal fluid is always normal and the unexpected presence of cell elements should direct one's attention to the nervous system and a careful clinical examination should be made. A careful search will often allow one to discover certain symptoms which, up to this time, had not been suspected. As soon as some decision may be come to, an energetic treatment should be prescribed without waiting for the appearance of other symptoms. Lumbar puncture will have thus warned one of the danger before the lesions have reached the point where it can no longer be remedied.

At the tertiary period the nervous centers need not necessarily be involved and the lymphocytosis in the cerebrospinal fluid may be wanting. This is now, however, the case during the secondary period, because, at this time syphilis acts like any other true septicemia. The nervous system is involved, as well as the skin and the reactions in the cerebrospinal fluid diminish and disappear along with the cutaneous lesions. On the contrary, during the tertiary period, syphilis deals out isolated blows, becoming localized in some apparatus, only here the lesions produced are more profound. They form true neoplasms which may arise in the skin, viscera or nervous system and it is consequently important to be informed at the very commencement of these complications, which are very apt to become extremely serious. So far as the nervous system is concerned, lymphocytosis of the cerebrospinal fluid will prove an early diagnostic sign of the greatest value.

THE END ATTAINED BY RENAL DECAPSULATION IN CHRONIC NEPHITRIS.

BY
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Edebohls proposed renal decapsulation as treatment for chronic nephritis. By causing the formation of adhesions between the renal parenchyma and the wall he hoped to improve the nutrition of the gland and thus bring about regression of the sclerous degeneration of the kidney. In his more recent writings, Edebohls again recalls how greatly decapsulation differs from interferences previously proposed for the treatment of Bright's disease. Neither Harrison nor Pousson, when advocating nephrotomy, had any intention of making this interference a systematic treatment of chronic nephritis.

And still more they did not propose to increase the renal circulation, but, on the contrary their aim was to diminish the blood-pressure in the midst of the renal parenchyma. Talamon has insisted on the absolutely different end to be obtained in each of these interferences.

On the contrary Mongour has endeavored to show that Edebohls' operation does not in its end essentially differ from nephrotomy and he considers decapsulation as an operation destined to diminish the intrarenal blood-pressure. He also states that the discord between the opinion that he upholds with Pousson and that of Edebohls is merely apparent, because, by assuring a means of complementary derivation, capsulectomy like nephrotomy, does away with passive congestion. Consequently, both these operations recognize the same pathologic physiology. Edebohls does not refer to the derivation of blood, and, in all his writings considers the results obtained as due to only two causes. The first and most important one is the neoformed circulation in the kidney and the second less important, the liberation of the renal parenchyma which is compressed in its capsule. Edebohls recognizes the fact that parenchymatous nephritis is accompanied by a compression of the kidney by its capsule, while interstitial nephritis shows no tendency to hernia of the parenchyma when the organ is incised. His operation consequently acts by diminishing compression of the tubuli contorti and the glomerules by facilitating regeneration of the epithelium, which certainly contributes toward the cure, but the most important factor is the active vascularization arising in the kidney by the formation of adhesions. This authority has endeavored to demonstrate that the new circulation arises from the walls to the renal parenchyma and in this respect he recalls the fact that decapsulation can only be roughly compared to Talma's operation, the latter being only intended to bring back the venous blood to the portal vein by a supplementary route, while capsulectomy has for end the establishment of a new source of nutrition for the kidney.

Lépine, who is extremely reserved in respect to surgical interferences which have been proposed in Bright's disease, and decapsulation in particular, on account of the seriousness of these operations in subjects greatly reduced in vital resistance, nevertheless admits quite willingly the results obtained by Edebohls and he says: "To sum up, it is undeniable that a good irrigation of the labyrinth is of capital importance for the functions of the kidney. In certain anatomical varieties of nephritis, this irrigation is more or less compromised, because it is exclusively dependent upon the afferent arteries. It is possible that capsulectomy will improve this condition of affairs, and in this case it may be hoped that the functional activity of the secreting cells of the kidney will be favorably modified." However, according to the professor of Lyons this is merely a false hypothesis and he points out how interesting it would be to verify by autopsy on a subject having undergone decapsulation, or experimentally in animals, whether or not the new circulation really takes place toward the renal parenchyma.

Recently, however, experiments have been undertaken in order to elucidate this question. Balthazard and Johnson have experimented on dogs, Albarran and Bernard, Gayet and Basan, Fabris and Ferrarini on guineapigs, while Claude and Anzilotti have carried these out on various animals. The larger number of these experiments have been undertaken on the kidney of healthy animals and in all instances in which one was dealing with nephritis it was always the acute type which has been produced on account of the difficulty met with in artificially producing chronic nephritis.

Johnson, basing his conclusions on his experiments, asserts that he was never able to obtain any very considerable anastomosis between the kidney and the perirenal vessels, while other observers have found these anastomoses with the exception of Fabris, and perhaps, Albarran and Bernard. Larkin, quoted by Edebohls, after many experiments on the physiologic effect of decapsulation, has obtained very varying results, the newformed vessels sometimes developing on a large scale, while in other instances there were very few, or no neoformed vessels.

Gayet and Bassan performed the following experiment: After having decapsulated one kidney in a guineapig the animal was killed and after injecting the aorta they found that the decapsulated kidney received a very much larger amount of the injection fluid than its fellow.

The results arrived at by Anzilotti are of much greater interest, these being based on a very large number of experiments, and he comes to the conclusion that decapsulation in no way changes the condition of the urine, nor the general health of the animal. The capsule is reproduced in 20 days, the newly formed capsule being softer than the original one and it is always thoroughly vascularized at the end of thirty days, the newly formed arteries and veins being distinctly seen. The circulation is increased in the perirenal atmosphere and after the lapse of 150 days he was unable to discover any tendency in the newly formed capsule to undergo sclerosis, the vessels freely communicating with those of the kidney and the perirenal tissues.

More recent experiments have been undertaken and the results already published by Asakura, Boncz-Osmolowsky, Emerson, Hall and Hearxheimer, Luxardo, Stursbreg, Thelemanner, and Van Cott. These experiments, which are very recent, are favorable to Edebohls' theory, these authors stating that usually they were able to find newly formed vessels.

Porter, from the results obtained in his experiments admits with Stursberg, that animal experimentation cannot furnish any other information relative to the value of Edebohls' operation, and, although the formation of a new circulation on the surface of the kidney may be admitted, it still remains to be shown whether or not these neoformed vessels are capable of curing Bright's disease. This question can only be solved by observation in man.

Although admitting Edebohls' theory, Professor Schmitt opposes the principle of decapsulation. Since chronic nephritis is due to a change in the blood, if the circulation becomes more intense, this authority believes that the renal lesions can only be increased from this fact. He also pretends that frequently the adhesions may be hard and sclerous and consequently the operation still more aggravates the condition of the kidney. But these views of Professor Schmitt are only hypothetic because no clinical fact has been brought forward to corroborate them.

The experiments of Claude and Balthazard are most interesting; they come to the conclusion that it is to be believed that decapsulation diminishes the blood-pressure, at the same time increasing the urinary tension, and they say: "We have demonstrated that nephritis is characterized by the high values of Hb.; on the other hand hypertrophy of the left ventricle in certain nephrites and the increase of the arterial tension testify to the exaggerated activity of the circulation. There is consequently every reason to believe that in these cases decapsulation of the kidney might lower the value of Hb. as in normal dogs and thus assure much more satisfactory urinary depuration and with a lesser cadiac effort." Prof. Lépine did not come to such conclusive results. The animal being narcotized with ether, the kidney was exposed by a lumbar incision and then drawn outward;. the renal vein was then included in a lateral ligature so as to produce quite a pronounced congestion of the organ, after which it was put back and the wound closed. A canula was then introduced into the ureters near the bladder and the urine from both glands was collected for two hours. The secretion was naturally less abundant from the kidney on the side where the vein had been ligated, and, although the centesimal proportion of urea and sodium chlorid was increased on this side, this increase in the percentage did not compensate the defective elimination of solid matters resulting from the diminution in the quantity of urine, so that the absolute quantity of urea, as well as that of the sodium chlorid, was less on the side where the vein had been ligatured. The sutures were then removed and the kidney again drawn outward; it was decapsulated, which gave rise to a slight hemorrhage from the surface vessels, after which it was dropped back into the wound. Now, during the following two hours, there was perhaps a slight increase of urination, but in none of the three animals on which these experiments were carried out, was this sufficiently distinct, so that it could be affirmed without reserve.

This question, essentially a clinical one, can evidently not be judged until many observations have been reported, and in this respect we have already referred to Porter's opinion. All that it is necessary to know is that Edebohls' operation is not *a priori* contrary to laboratory experiments and it only seems just to admit that this operation cannot be rejected on principle, and in spite of all that remains still to be known in the physiology of decapsulation, there is reason to admit the reported clinical facts, especially taking into consideration the fact that the results of the interference had already been marked before Edebohls developed his theory.

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A Ministry of Health for Canada.—Director General Montizambert (of Public Health of Canada) in his annual report urges the importance of establishing a Dominion Department of Public Health under a responsible Minister of the Crown, so that all matters affecting the health of the Dominion may be consolidated under one head.

RECENT EDITORIAL OPINIONS.

Journal American Medical Association.—SODIUM CITRATE AS AN ADDITION TO MILK MIXTURES FOR NURSING INFANTS. Cow's milk contains too much proteid and the casein forms a denser and larger curd than the casein of human milk. Sodium citrate has been used to lessen the size and density of curds, a working formula being one grain sodium citrate to each ounce of milk diluted with an equal amount of water. Wynn reports satisfactory results in 69 cases, most of them children suffering from milk dyspepsia. Shaw also reports favorable effects in 23 cases.—LATENT TUBERCULOSIS IN CHILDHOOD. This is a field comparatively neglected in our crusade against the disease. The question is specially important in the children of the very poor. Chalmers has shown that in Glasgow 3.4 percent of children of families occupying three rooms have tuberculosis, 5.9 percent of those occupying two rooms, and 8.3 percent when the family is crowded into one room. Such children live in unsanitary dwellings, are underfed, and too often go to school in unfit rooms, all aiding the development of tuberculosis. Sanitary schoolrooms should be demanded. Does wholesome feeding come within the rights as well? In England and later in France, Germany, Italy, Norway, Switzerland, and Belgium, has been inaugurated some system of free school dinners, with on the whole very satisfactory results. Prevention of tuberculosis is better than the cure and must be begun early in life.—MENINGOCOCCI IN THE NASAL CAVITIES. Goodwin and von Sholly isolated meningococci from the nasal mucus in 50 percent of meningitis patients during the first two weeks of the disease in the New York epidemic. In the nasal mucus of 45 healthy persons in more or less close contact with those patients, meningococci were found in 10 percent. Of 55 medical students, not one yielded meningococci. Davis in Chicago demonstrated meningococci in the nasal mucus of one patient with meningitis. These findings indicate the necessity of isolating cases of the disease, not only early but until meningococci are not found in the nasal passages.—THE CHEMISTRY OF TUMORS. The relatively few chemic investigations of tumors thus far made have shown in the chemic processes of newgrowths but little deviation from those of normal cells of similar origin. In composition also the cells of tumors closely resemble that of the cells from which they sprung. Attempts to isolate a poison that might account for the cachexia of tumors have not been very successful. Wolff has found that the proteids of cancer cells contain a smaller proportion of globulins as compared to albumins than does normal cells. Bang finds in sarcoma of lymph-nodes a compound found in normal structures and believes it possible to trace the origin of sarcomas of these tissues to them chemically. That glycogen is an indication of the malignancy of a tumor is entirely disproved.—DISPENSARY TREATMENT FOR TUBERCULOUS WORKING PEOPLE. Sanatorium treatment is applicable only to the favored few and home treatment will always possess many advantages over the former. But if home treatment be given, part of it must be in connection with special dispensaries as many patients cannot pay for long periods so often necessary. Working people can be overseen only in dispensaries and in those with hours adapted to their necessities. Such dispensaries should be open from 6:30 to 8:30 in the morning and for an hour or two in the evening. It is also advisable that they be open during certain hours on Sunday.—THE MEDICAL LIBRARY. There are two ways of enlarging the scope and influence of the medical library movement now in progress in this country. 1. Vigorous efforts to establish libraries in large cities as Detroit, Omaha, Seattle, St. Louis, and other places without such advantage. 2. A larger use by medical men of existing libraries. Comparatively few physicians make adequate use of the medical library. Too many contract the textbook habit and hardly think of consulting the latest literature in the shape of medical journals. The best time to begin to impress upon physicians the value of a library is when he is a student.—ANTITUBERCULOSIS ORGANIZATION. The recent annual report of the Pennsylvania Society for the Prevention of Tuberculosis contains much that is of practical value in guiding those who wish to initiate and increase the efficiency of public regulations and popular education regarding the disease. This was the first society against tuberculosis to be organized and has accomplished a great deal against tuberculosis by sending out tracts and in many other ways. The change brought about in the Eastern Penitentiary is one of the results pointed to with pride. The president of the society believes that the problem of sanatoriums will probably need to be solved by private beneficence rather than by State aid.—MODERN IDEAS CONCERNING PUERPERAL ECLAMPSIA. Very many theories have yet to be proved or disproved. Of great practical importance is the fact that the supporters of all agree upon prompt and early emptying of the uterus as an essential of treatment. This is distinctly opposed to the expectant plan advocated by the older supporters of the autointoxication theories of the affection. In some clinics early interference has lowered the mortality to from 1.8 to 0.5 percent.—UNTOWARD SERUM REACTIONS. Rosenau and Anderson describe a newly indentified poisonous action of blood-serum, particularly of the horse as shown by experiments upon guineapigs. A primary injection is innocuous but if a second be given after a proper period, at least ten days, has been allowed to elapse, severe symptoms or even death occurs. This is not peculiar to diphtheria antitoxins but to all forms of the serum that may be used. The practical point is that when one is giving serum treatment he should administer a massive single dose or if a second large dose is to be given later, smaller doses should be injected at short intervals during the "incubation period" of ten days. This prevents the untoward action of the second dose.

Boston Medical and Surgical Journal.—CHANGE OF PUBLISHERS. The journal is hereafter to be published by the firm of D. C. Heath and Co., which has recently begun the publication of medical books. There is to be no radical alteration in the policy of the journal as an independent medical organ.—THE NERVOUS SYSTEM IN RELATION TO DIABETES. In his recent contribution on the pathogeny of diabetes, Pavy holds there is no doubt that cerebral action is intimately related to the affection. It is possible that diabetes is primarily a neurosis involving a particular part of the vasomotor system. The broad subject of the relation of the nervous system to the onset of disease is a problem which students of immunity must sometimes face.—THE ORGANIZATION OF THE MEDICAL PROFESSION IN AMERICA.—This is proceeding satisfactorily in spite of the many problems involved. In the future the mechanical difficulties of a great general meeting with possibly 15,000 attending, will be prohibitive. This will increase the present tendency for affiliation of certain State societies on geographic lines. The possibility of a New England Medical Association has already been suggested. This would give opportunity for groups of States to develop along lines presented by the problems peculiar to each.

Medical Record.—TREATMENT OF RINGWORM IN SCHOOL CHILDREN. Walch pratically isolates the scalp instead of the child and thus allows the patient still to attend school. The scalp is thoroughly cleansed and a germicide, as formalin or sulphurous acid, applied. It is then exposed to the rontgen rays for 10 minutes. Finally it is enclosed by a film of collodion or other impervious material which prevents spread of the disease. Every week or ten days the film is peeled off and complete depilation is finally effected.—A BLOW TO PHARMACEUTICAL REFORM. A recent letter in the Nashville Journal of Medicine and Surgery from Mr. Hallberg, a member of the Council on Pharmacy and Chemistry of the American Medical Association, is regarded as an utterance damaging to the cause of pharmaceutical reform. It savors too much of intimating that the object of coercing manufacturers of proprietary remedies to reveal their formulas is simply to enable the large manufacturing firms to make the same preparations and offer them to the profession with the prestige of a larger and longer established house behind them. A prompt official disavowal by the Council of Mr. Hallberg's utterance is hoped for, as in its absence the Council will be discredited in the eyes of those members of the profession who believe in a square deal.—ACUTE NEPHRITIS AND CHRONIC TONSILLAR HYPERTROPHY. Hougardy has called attention to the fact that many cases of acute nephritis in children without apparent exciting cause are accompanied by chronically enlarged tonsils. Traces of recent infection are not usually evident. In one case the good effect of tonsillectomy upon the course of the nephritis was demonstrated. The observations of Hougardy form another argument against leaving chronically hypertrophied tonsils to be cared for by nature.—THE TRANSMISSION OF LEPROSY. The observations of Penang and Bassewitz show that the itch mite may transmit the bacillus of leprosy. Goodhue, from many years' observation at Molokai, is convinced that the bedbug and the mosquito *Culex pungens* can harbor the bacillus.—STATE OF THE BLOOD DURING BIER'S TREATMENT. Stahr finds that localized leukocytosis occurs in the part under treatment. In some instances the lymphocytes increase and and the neurophiles decrease. The red cells and hemoglobin remain entirely unchanged or vary within slight limits.—CLINICAL SIGNIFICANCE OF CASTS IN THE URINE. Most modern textbooks consider renal casts as pathologic elements. Nevertheless, the accumulating evidence of the last few years unquestionably points to the frequent occurrence of casts in the urine of persons with apparently normal kidneys. The question as to the true meaning of casts therefore still remains an open one. Klieneberger and Oxenius examined the urine of 93 apparently healthy young men and found casts in 89 percent. Of these 76 percent were hyaline, 4.3 percent granular, and 4.3 percent epithelial. Albumin was present in 58 percent. These writers believe the majority of the men in this series suffered from contagious affections in childhood and these left traces in the kidney; this explanation hardly appears feasible. Philosofoff also found casts of some type in 52 percent of 50 healthy young men on hospital diet. These and other reported facts seem to justify the conclusions that the presence of casts is not necessarily an evidence of kidney disease.—AN INTERNATIONAL SOCIETY OF TROPICAL MEDICINE. At the coming meeting of the British Medical Association at Toronto there will be no section on tropical medicine. Dr. Cantlie deplores this and suggests the formation of a Tropical Medicine Association which will secure for tropical medicine the recognition in Great Britain which its importance demands. Such an independent society would probably do better work than if merely a section of the British Medical Association. The idea might be worth developing to the point of an international society of tropical medicine.—THE AMERICAN MEDICAL DIRECTORY. The issuance of a directory by the American Medical Association is without excuse unless given free of cost to the members of the association. The sales of the book to nonmembers and the receipts from advertising should pay the cost of production or even if there is a small deficit the association will not be bankrupted. Whatever the association produces, whether transactions, directories, books, or buttons, should be the property of each and every one of its members.—ANOTHER POSSIBLE ETIOLOGIC FACTOR IN MALARIA. Recent studies by Sehrwald indicate that intestinal worms may play a part in some of the more obscure problems of malaria. This is particularly true of the uncinaria, sectioning of which has shown parasites in the intestinal tract and also in the mouth as they are found in mosquitos. The practical point is in cases of malaria accompanied by the intestinal parasite, the latter should first be gotten rid of to prevent reinfection even after quinin has been administered.

New York Medical Journal.—LUMBAGO AND ITS TREATMENT. The pathology is not clear and the disease has a tendency to subside spontaneously, hence treatment must not be credited with too great efficacy. It is doubtful if dieting has any influence on the affection and there is no evidence that tobacco is harmful to the patient. There also appears no good reason for the stereotyped rule of keeping the patient in bed.—STRENUOUS QUARANTINE IN PHILADELPHIA. On Sunday, May 7, a section of Philadelphia having a population of 10,000 was quarantined during a period of 8 hours while 1,000 persons were vaccinated. The cause of this remarkable enforcement of isolation was a case of smallpox discovered on the preceding day. It is hoped this manifestation of paternalism on the part of the health authorities of Philadelphia may not turn out to have been a bad precedent.—THE DOCTOR'S VACATION. Vacation time is at hand and are physicians preparing to take theirs and follow the advice they so often give patients to change scenes and occupations? The chief essential in the pleasure of a holiday is the element of change. "We have always had a great admiration for that doctor who spent six weeks in an Adirondack camp without the fact being discovered that he was a physician." Cultivate your hobbies and follow the lead of inclination. It would be well were it a condition of good standing that every physician past the age of 40 should take a vacation of at least a month every year. It is believed that the vacation habit is a good preventive of those vices of metabolism which result in arteriosclerosis.—BACILLUS CARRIERS. The typhoid bacillus has been shown to exist in the intestinal tract and elsewhere for years after the person has had typhoid fever. We should be just as careful to disinfect the dejecta of typhoid and paratyphoid patients as we are to isolate persons during the desquamation following the exanthems. The Germans are paying particular attention to these "bacillus carriers" as the origin of epidemics. The source of the bacteria is most probably the gallbladder where they have remained for as long as 20 years. Under ordinary circumstances the urine and feces should be disinfected for three months after convalescence. If there is a history of liver trouble or of gallbladder involvement, a year is certainly not to long for this precaution to be observed.—UNUSUAL LOCALIZATIONS OF GOUT. Attention has recently been called to glandular gout. d'Estrées asserts that gouty orchitis is not uncommon in England. The parotid gland in gout, as in mumps, seems to bear a special relation to the testicle. Twelve cases of parotid gout have been reported. In these cases of irregular localization of the gouty attacks, there is practically always an articular involvement which is really necessary to confirm the diagnosis. Such arthritic attack may not come for a long time after the glandular affection, in one instance the toe being involved two years after the parotid was incised for a supposed abscess. Bondet mentions two cases of gouty manifestations on the face, one at the root of the nose, the other on the chin.—SPINAL ANESTHESIA AND OCULAR PARALYSIS. Loeser mentions two cases in which the trochlearis and abducens of the left eye were affected. The paralysis, which lasted for several weeks, came on a few days after the operation. The anesthetic in one case was novocaine, in the other stovaine.—YELLOW FEVER. The observations of the French Commission on Yellow Fever, made at Rio de Janeiro, are in the main parallel with those of American workers. They agree that *Stegomyia fasciata* is the agent of transmission and give Reed, Carroll, Lazear, and Agramonte full credit for first demonstrating that fact. They find that to become infected, the mosquito must bite a yellow fever patient during the first three days of the disease, not during the incubation period nor after the third day. Twelve days are then required for the mosquito to become an infecting agent, after which it is a source of danger as long as it lives. The female transmits the infecting power to the first generation of her offspring but they do not appear capable of causing the disease until after the fourteenth day of their existence in the perfect state. The Commission has been unable to isolate the organism of yellow fever but certain characters suggest that it belongs to the family of spirilla.—A NEGLECTED ELEMENT IN DIETETICS. Most food prepared for sick people lacks appetizing taste which is such an essential feature in the phenomena of digestion. There is a widespread opinion among the laity and the profession that anything pleasant is harmful to the sick. Flavor in food is a necessity which applies to the sick as much as to the well. The art of cooking can add much to our resources in dealing with disease in the way of eliminating the poverty stricken slops of the regulation sick man's dietary.

Lancet.—REPORT OF THE ANTITYPHOID COMMITTEE. An interim report of the Committee appointed by the Army Council shows that the Committee is satisfied that "the records which are available up to date furnish proof that the practice of antityphoid inoculations in the army has resulted in a substantial reduction in the incidence and death-rate from enteric fever among the inoculated." They recommend that the practice of voluntary inoculation against typhoid fever in the army be resumed. The committee also emphasizes the urgent need of further investigations of the subject. Statistics for 1904 show that the incidence of typhoid fever among the inoculated was reduced to at least one-half of that among those who were not so inoculated.

Medicine.—MORBIDLY HIGH ARTERIAL PRESSURE. The increased vascular pressure accompanying certain kidney lesions is generally regarded as unfavorable and direct therapeutic measures to combat it are often instituted. Krehl says the process is not so simple as we usually think. The high pressure is in a sense a conservative process, the increased pressure leading to elimination of materials that would otherwise poison the organism. The correct way to lower pressure is to eliminate from the body the toxic agent causing the condition; this can be done by means of a milk diet. Lessen the work of the kidney and the vascular pressure will fall.—STOMATITIS DUE TO VULCANIZED RUBBER. Inflammation of the mucous membrane of the mouth of those who wear artificial dentures has generally been attributed to lack of cleanliness, stomach disorders, or gout. Mahé directs attention to a form due to the rubber. The mucous membrane of the hard palate or alveolar process becomes rough and sometimes fungous, bleeding readily. There is often foul breath, increased salivation, and a degree of gingivitis of the remaining teeth. There is some evidence that the secretions of the mouth act on the mercury sulphid used to color the rubber.—OVERCROWDING OF THE PROFESSION. Within the past year or two there has been a marked falling off in the number of medical students, this happy result probably being brought about by a recognition of the overcrowding of the profession. There were graduated in this country last year about 5,500 medical students, the deaths of physicians being close to 2,300. It is the business of physicians everywhere to dissuade students from beginning the study of medicine.—FATIGUE IN SCHOOL CHILDREN. More exact studies should be made on the length of school hours and their values. For the average child the usual length of six hours for the school day is too much. They would probaby learn as much if the time was reduced to 4 or even 3 hours. Bellei has made a study of the fatigue of school children, specially as regards a long or a short rest between the forenoon and afternoon sessions. A two-hour rest in the middle of the day enables a child to work for 45 minutes as well as in the morning but after that fatigue rapidly comes on. He reaches the conclusion that the work done during the afternoon session is of no advantage to children because of the mental fatigue caused thereby and is full of danger to their health.

Surgery, Gynecology and Obstetrics.—COOPERATION AMONG THE GERMAN UNIVERSITIES. Two reasons are given for the admitted superiority of German medical literature. The first is that writing is done, to a great extent, from the laboratories and hospitals connected with universities. A large part is taken by the instructors and assistants under the direction of the heads of the various departments, thus insuring many workers with the opportunity for doing painstaking scientific work. The second feature is the cooperation of the German universities. This is made possible by the similarity of the universities, by the uniformity of their requirements and by the interchange of students and professors. These points are not peculiar to Germany but are there best developed. Here the conditions are very different but it is possible that improvement may be made by promoting a more intimate knowledge of the hospitals and laboratories throughout the country. A step toward cooperation may be taken by contributing to a larger extent, as universities and hospitals, to medical journals.

NEWS AND NOTES.

Leprosy among Filipinos.—The Island Board of Health reports 3683 lepers in the Archipelago, scattered through the various provinces. Cebu, which has 675, heads the list, but only one province is wholly free from the disease.

Better milk in New Jersey is guaranteed by the new law going into effect July 4, by which all creameries in the State must be licensed and conducted in accordance with the provisions of the law. Nearly 200 establishments will be affected.

Medical Social Settlement for Chicago.—The latest venture in philanthropy in Chicago is a medical social settlement on the west side, to be conducted by the Chicago Tuberculosis institute. A feature will be a large roof-garden for children.

The Investigation of Syphilis.—A bill has recently been introduced into the German Reichrat appropriating $25,000 to the investigation of syphilis in the light of recent researches, and placing it in the hands of Professor Neisser of Breslau.

Female Medical Graduates in Switzerland.—Of 79 theses for the degree of Doctor of Medicine presented to the Universities of Geneva and Lausanne during 1905, no fewer than 42 were offered by women, all but some half-dozen of whom were Russians or Poles.

Slaughter-houses Under Ban.—Chief Abbott warned the proprietors of 67 abattoirs to remedy defects in sanitation and cleanliness under penalty of being closed up. About 15 percent of the abattoirs in the city are reported as being to the highest mark in all points.

Against Patent Medicines.—The Germantown (Pa.) Homeopathic Medical Society has adopted resolutions placing itself on record as against the manufacture and sale of patent medicines and nostrums of all kinds, and request all members of the profession to withdraw their support from medical journals advertising them.

Tuberculosis is cause for divorce according to a decision recently rendered in Los Angeles Cal. A Mrs. Schammel was granted an annulment of her marriage because her husband is suffering from tuberculosis and was afflicted with the disease at the time of their marriage, though he denied it when his prospective wife put the question to him.

A Japanese Woman Professor of Medicine.—The Japanese Government has conferred the honorary title of Professor of Medicine on Miss Tada Urata, who some years ago graduated Doctor of Medicine at Marbourg, being the first Japanese lady to obtain that degree in Germany. The distinction has hitherto seldom been conferred on a woman.

Infectious meningitis is spreading in Switzerland and is likely to cause some uneasiness among tourists. The disease was last reported as causing many deaths at Zurich, and now it is causing serious alarm in Canton Argau. It is feared that the policy of the military authorities of Zurich in sending the newly-formed recruits back to their homes may carry some ill-effects to all parts of the country.

Antitoxin Bill Vetoed.—Governor Stokes of New Jersey has vetoed the bill providing for the distribution of antitoxin by the State to persons who are unable to pay for the remedy, on the ground that it is a municipal and not a State function to supply necessities to the poor, and that doctors should not be compelled to risk the loss of practice by designating persons who are indigent patients and others who are not.

Three Babies, One Fee.—Considerable interest attached to a case recently tried before the Jamaica (L. I.) municipal court. Dr. Casselberry was engaged by a grocer to attend his wife in confinement and made an engagement for $18. When the woman was confined Dr. Casselberry was out of town and a confrere acted as accoucheur. It is stated that when he discovered that the infants to be delivered were certainly more than two and number unknown, he called in help, thus increasing the unlooked for professional obligations of Dr. Casselberry, who consequently presented bill for $50. The happy father demurred and suit followed to recover. The judge decided that the original agreement as to the confinement should stand, since the contract was for ministering to the parturient woman, and the number of infants did not enter in. But he was of opinion that the defendant should also pay for medicines furnished and allowed $12 for these.

American Medicine

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The Psychology of the Malay.—An interesting light is thrown upon a recent Philippine murder trial by the letter of our correspondent elsewhere in this issue. Our remarks of March 17, were designed to call attention to the necessity for a scientific study of the psychology of lower races—particularly those called oriental and more particularly the Malay. It has long been known that they will not tell the truth, and that we have blundered in the Philippines in using legal machinery designed for races of high moral standing. The science of medical jurisprudence must be enlarged to take in these new ethnic problems. The facts given by our correspondent indicate that the matter is of far more importance for it proves that we cannot depart from the rules of evidence and legal methods designed to prevent the conviction of innocent men. The existing conditions deserve prompt action by Congress.

Independent medical journals were endorsed by the House of Delegates of the American Medical Association at the Boston meeting. This action was taken because of ugly rumors that the Association was attempting or would attempt to destroy all journals except those it owned or controlled. Enemies of organization were using these rumors to its injury. It is difficult to understand why any one would be so lacking in judgment as to attack the journals whose efforts have undoubtedly been the most potent cause of the present uplift of all organizations—County, State, and national. If these journals have been instruments for the creation of the organization, common sense should tell us that, if made enemies, they may be used for its destruction. How foolish to turn friends into enemies, and how treasonable to the organization, and how lacking in common honesty to stab those who have so aided us. No, we cannot believe such rumors are correct—they presume a standard of honor too low.

Too much independence has been the curse of medical men, but it is possible to be injured by the opposite, of too much subordination due to a rigid organization which may so easily fall into ordinary ring-rule. We are not all sure that the methods we Americans adopt in organization are the best for they give power to a few who may betray their trust. Free discussion is essential to every enduring body, to prevent graft or rectify mistakes. Nothing is so injurious as a suspicion of hiding facts. It is, for instance, a silly policy for the Association not to itemize its expense account. It is a cause of disorganization. It is therefore essential to the welfare of any organization that it must be subjected freely to outside criticism. We remember the life insurance scandals. Every friend of the American Medical Association, who has its welfare at heart, is glad of the endorsement of the independent journals. Like a boy, it needs spanking now and then, and like most boys, it will become vicious if it is never spanked. Above all it must be praised by those who have nothing to gain. Ordinary resolutions of commendation, are like those of a mutual admiration society where the members pat each other on the back, and each one pats his own back, too. Without free speech, frank criticism, and brave individualism we shall be crushed under the evils of organization.

The low sense of moral obligations in San Francisco is a fitting outcome of the carnival of immorality formerly centered in that wickedest city of the country. The medical profession is to suffer for the sins of the community for it appears that while all who helped in the hours of trial following the earthquake are to be paid—except the doctors. These gentlemen lost all their possessions, yet without hesitation devoted themselves to the relief of suffering instead of seeking remunerative employment, and now find themselves objects of charity while in the very act of being charitable. As there are on hand between four and six millions of cash, contributed for this very purpose of paying for the relief of suffering, it is difficult to find words to express a just estimate of the moral standard which refuses relief to these gentlemen. It is particularly unfortunate that this payment should be refused from funds donated for the purpose, when there is an actual outcry for the division of the money as "loot" among the population which has been the recipient of medical care and has played the pauper ever since.

Typhoid in the San Francisco camps has been the predicted result of the careless ways of free-born American citizens who have an hereditary contempt for authority of any sort, and of sanitary authority in particular. In the Spanish war this species of man asserted he would not be vaccinated as he knew it was useless, and he would drink what he pleased, no matter what the ridiculous sanitarian might say. The undertakers took charge of very many of them then, and from well-founded rumors the undertakers are beginning to get busy in San Francisco. The daily papers ignore the matter from motives of pride, but returning visitors bring news of inexpressibly bad conditions except in the camps held under a strict discipline. The average civilized man the world over acts the same way and it is no special discredit to San Francisco; but there is no reason for concealment.

Man's Instincts Unfit Him for Life in Crowds.—The sanitation which makes city life possible is known only to a few and is a matter of education. The uninstructed are really cared for like so many domestic animals, and have no realizing sense whatever of the vital necessity of pure water and the proper removal of excreta. When disaster removes the safe-guards thrown around them by men of greater intelligence, they act like animals, and the diseases of crowds, or autoinfections, spread like wild fire. Unless the strong rule of those who do understand the matter is continued a long time, we may expect to learn of future disasters. A word to the wise is sufficient, and we hope that these poor folks will not be permitted to destroy each other by preventable diseases.

The pauperization of the afflicted is the inevitable evil resulting from overgenerous charity in times of disaster. When Galveston was overwhelmed and there was need of thousands of helpers for humanity's sake, the local negroes refused to work, as they were fed and sheltered. A large percentage of mankind never work unless hunger or its equivalent drives them to it. It is now said that many a laborer in San

Francisco is taking a holiday, because he has enough to eat and a shelter is provided for him as good as that of the burned-out millionaire. People are detected in the "bread-line" who have secreted in their homes canned foods by the cart load. The local committee has between four and six millions of dollars in cash and they are appalled at the problem of its utilization—and well so, for it means more pauperization. Indeed, the socialistically inclined are already demanding that the cash be divided up among them at once. "It was given to us," they say, "and we demand only our own."

The dispensary evil may now be fully appreciated. No one would be willing to abolish all dispensaries, but our generosity to the afflicted is pauperizing them to such an alarming extent that we are accused of doing more harm than good. There is a growing opinion among the less intelligent that when they are sick or injured it is the duty of society and not the duty of the family to care for them. The medical profession, by its self-sacrificing unremunerated labors, is responsible for much of this unwholesome conduct. It is Divine law to help those who help themselves, and we can safely do likewise. It is to be hoped that our earthquake contributions, after feeding the hungry and clothing the naked and housing the shelterless, who are wholly unable to feed, clothe, and shelter themselves, will be used exclusively to help the idle to support themselves. Otherwise a crop of paupers will be reaped which will equal our own crop turned out by free hospitals and dispensaries.

The army medical department has been again sacrificed in favor of another branch of the service. In 1901, when a great enlargement of the army was necessary, it was thought that the country would object and consequently the increase was mostly confined to certain branches, but the medical department was sacrificed to make the total increase appear as little as possible. The damage done to efficiency has been regretted ever since. In the session of Congress just closed, there were two bills to remedy the defects of the legislation of 1901, but Mr. Cannon allowed only one to pass and of course the medical department was chosen to wait. It is a political necessity, perhaps, but we hope that the medical profession will soon make its power so evident, that it will be a political necessity to make the medical department efficient. The present course hampers the War Department plans for protecting the health of soldiers.

Prevention of campaign sickness is demanded by the people, but it cannot be done without the trained personnel with power to act. The War Department and the President desire new legislation in obedience to the popular will, for the matter is still a sore point with those who lost relatives unnecessarily in the Spanish war. The next war must not repeat these blunders. If we are not prepared, the blame will be placed upon Congress and not upon the man who is unfortunate enough to be Surgeon-General at the time. It is now desirable to convince Mr. Cannon that he will be doing a popular thing to force this legislation through the first thing in December. It is remarkable, by the way, that we seem to have drifted away from the representative form of government, and to have placed legislative power in the hands of but few men. It is well to have a check upon radical legislation and crazy extravagance, but the brakes seem to be so strong as to stop some of the wheels. It is said that the representatives are overwhelmingly in favor of increasing army medical efficiency, but are unable to express their will. It is strange that they are unable to devise means of doing what they think they should do, instead of being led like sheep.

The sale of undrawn poultry or its preservation in cold storage are to be made misdemeanors if contemplated laws are passed. It is a matter for congratulation that the filthy practice is to be frowned upon and eventually ended. In the case of fish and poultry kept in cold storage, it would seem that common commercial sense would dictate cleaning them out, to prevent the bad taste communicated to the flesh. As we have repeatedly said, our modern crowding together compels us to subsist on preserved foods, and we must insist on the best methods. If the dealers will not be decent voluntarily they must be so involuntarily. The Agricultural Department at Washington will experiment on the cold storage of undrawn poultry and fish to determine exactly the degree of deterioration.

The canning of decayed fruits and vegetables has not been mentioned except casually, as attention has been so occupied by the dreadful revelations of the meat scandals. It is an evil nevertheless which demands a new "Jungle" crusade. More or less authentic rumors float out from the centers of these industries, and if we are to believe what we hear, the sooner something is done the better. Decayed fruits may be sterilized by heat, the acids neutralized by alkalies, some sugar or saccharin added, and the mess will keep, but it cannot be wholesome. Perhaps at present it would be well for physicians to suspect all canned goods as possible causes of obscure digestive troubles. The public would be well to avoid all such stuff until assured of its wholesomeness.

Inspection of all prepared foods is needed. If the manufacturers know on which side their bread is buttered, they will open their factories to the public for inspection and also demand government inspection by men who cannot be injured for reporting defects. In a short while no canned goods will be salable unless the date and place of production are mentioned on the label, and it is known to be an honest clean business. Happily the public is becoming finniky. They don't like canned maggots as an occasional dainty, much less as a steady diet—and they are beginning to think before they buy and eat.

Ptomaine poisoning of travelers is becoming a too common news item. The last case reported is that of a party of editors traveling to the annual meeting of The National Editorial Association, in Chicago. Following a banquet in an Indiana town, more than a third of the party were stricken. Fortunately a physician was along, and one hopes that he seized the opportunity to impress this object lesson upon these makers of public opinion. Each of them should now be enlisted in the cause of pure food and incidentally of pure drugs. While we sympathize with the sufferers and congratulate them upon their escape from death, we cannot avoid the thought that if accidents are to occur we hope they will always happen to those in a position to do something to prevent a like calamity to others. The editors declined an invitation of the packers to breakfast at the slaughter-houses, wherein they showed wisdom—or a sense of humor.

Mosquito extermination has at last reached a legal stage by the passage of a law in New Jersey providing for the abolition of the breeding places, at the New Orleans meeting of the American Association for the Advancement of Science. The symposium on the mosquito carried diseases gave the impression that practical men were disappointed in all their efforts to kill the larvas, and would now unite in draining the swamps so that no mosquitos could be born—at least in places where they are a nuisance. Efforts in this line have been highly successful, but it is now to be tremendously extended. The new law has been published in *Science* and is due to the labors of the State entomologist Prof. Jno. B. Smith, and later we may expect to hear of a decided diminution in sick rates in the areas where the work is to be done. In Pennsylvania the health commissioner is taking up the problem and we suppose that in time it will be satisfactorily settled in every State of the union.

The economic importance of pure science cannot be better illustrated than by the labor spent upon the mosquito which was formerly considered merely an unpleasant nuisance, though here and there rendering great districts uninhabitable. As soon as pure science showed that it was dangerous it was condemned to extermination. It was then realized for the first time that the breeding places could be drained in many places and rendered fit for agriculture or even residence. This new law goes a step further and declares that the owner of mosquito breeding swamps is maintaining a nuisance, inimical to the public welfare. It calls upon him to abate the nuisance or the local or State government or both will do it and charge part or all of the costs to the land which will thus be presumably increased in value. We will see much public benefit finally accrue as a result of the patient labors of scientists working for pure knowledge without any practical end in view.

The delusions of Dowie, of Chicago, were brought out in a recent court trial in Chicago, when Dowie himself was on the witness stand. There is no doubt that he is firmly convinced that he is Elijah. This false idea has stimulated him to use all the force of his naturally powerful though perverted mind to the propagation of his ridiculous religion. If he is not possessed of a delusion, then he perjured himself. In either case, it is a pitiful spectacle for the hundreds and thousands of silly dupes who have been gathered into his fold and who have so freely parted with their property at his command Insane men have originated religious cults time without number, and probably will do so in the future, but it does seem that modern publicity of the truth should counteract their efforts. It is really a reflection on our intelligence. Alienists have known of Dowie's condition a long time, and if a little more attention had been given to their opinions, many an emotional man might have been saved considerable loss and considerable public contempt.

The Christian science temple, or tabernacle, or joss-house, or whatever it is called, in Boston, has been finished and some thousands of the million or more dupes of this particular form of mental unbalance made a pilgrimage to this modern Mecca of neurotics, to take part in its dedication. Mrs. Eddy has recently been called "The Lydia Pinkham of the soul," and like the real Lydia she is invisible—not deigning to show herself to her devout followers. It is rumored that she is mortal, or at least that she is ashamed of the evidences she shows of age, but a little art should remedy that—particularly if she would show herself on a balcony at a safe distance from the eyes of her feminine admirers. Peter the Hermit, Mohammed the epileptic, John Alexander Dowie, Mrs. Eddy!—who will next give us the chance to prove that we have as little sense as our ancestors of a thousand years ago?

BOOK REVIEWS.

The Medical Epitome Series—Clinical Diagnosis and Urinalysis.—By JAMES RAE ARNEILL. Philadelphia and New York. Lea Brothers & Co., 1905.

This volume is No. 17 in the series which is to include 22 in all, and is one of the best. The subjects are large to handle in a book of this size but the author has succeeded in squeezing into it an enormous amount of information. He has the faculty of giving what is needed by the practitioner and omitting the more complicated processes applicable only to the laboratory worker. The book contains 79 illustrations, mostly of apparatus.

Materia Medica and Therapeutics.—By F. J. PETERSEN, M. D. 1895, F. J. Petersen, Los Olivos, Cal.

Setting aside the rather jerky English and accepting the author's standpoint regarding the uses of drugs, the book possesses the merit of brevity and clearness and gives a very good idea of the present day practice of an intelligent eclectic. The author lays stress on the difference between the "primary" and "secondary" action of drugs. He takes as example, nitroglycerin, and advises what he terms the "primary action" in cases presenting symptoms of cerebral engorgement, and "secondary action" in cases presenting cerebral anemia. He does not use these terms, but describes a series of symptoms accompanied by flushing in the one case, in the other with pallor. To get the "primary action" he uses very small doses, to get the "secondary action" comparatively large ones. The "indications" given throughout are based on symptomatology rather than upon pathology or etiology. While we cannot indorse these views, we believe that the experience accumulated by the eclectic practitioner as to the effect of drugs on various symptoms and symptom groups, is well worthy of study and utilization under appropriate conditions. For example, passiflora, veratrum, piscidia, phytolacca, gelsemium, chionanthus which are little used by others than eclectics, have decided usefulness in certain morbid conditions. From a little book like Dr. Petersen's, one obtains a good conspectus of their empirical employment of remedies.

A Textbook of Pharmacology and Therapeutics.—The Action of Drugs in Health and Disease: by ARTHUR R. CUSHNY, M.A., M.D. Aberdeen. Fourth edition, thoroughly revised. 1906. Lea Brothers & Co., Philadelphia and New York.

There is no one work on pharmacology or materia medica which covers the entire field equally well. One is stronger in practical applications, another in pharmacy, and another in pharmacology. Among the latter class, Cushny's book stands in the front rank. The clear style of the author, his wide reading, and his habit of accurate, personal investigation, give a particular value to his statements of the physiologic action of drugs. He also glances toward the new relations between drugs and living tissue which the new chemistry and new physics have brought to light. The classification is arbitrary and might be much improved. The therapeutic recommendations are deficient and do not exhibit the same wide personal knowledge as the description of drug action. Nevertheless, the book is one which every student of the subject, and every practising physician ought to have upon his shelves, not only for occasional reference but for frequent reading. Therapeutics guided by the principles which this work exhibits and further informed by the knowledge of bedside reactions, obtained from other books and from personal experience, may fairly claim to be a rational therapeutics. We should add that this edition has been sufficiently brought up to date regarding new drugs and new discoveries concerning the actions of old drugs, with the exception of such very late work as the anesthetic properties of magnesium salts. Moreover, the terminology and pharmacy have been revised to conform to the new United States Pharmacopeia.

A Treatise on Diagnostic Methods of Examinations.—By PROF. DR. HERMANN SAHLI. Edited with additions by FRANCIS P. KINNICUTT and NATH'L BOWDITCH POTTER. Authorized translation from the fourth revised and enlarged German edition. Philadelphia and London: W. B. Saunders and Co., 1905.

This work is a somewhat massive book of 1008 pages, with 383 figures and 12 plates in the text. It leaves little to be desired in the way of completeness in regard to physical, chemic and microscopic methods of diagnosis. Careful attention to details is the particularity in which the book excels. The first 350 pages are occupied by the various aspects of physical diagnosis, 16 different topics being discussed. Then follows examination of the stomach and stomach contents, of the intestine and feces, the urine, sputum, and blood. Sections are devoted to laryngoscopy, rhinoscopy, ophthalmoscopy, exploratory punctures and harpooning, and röntgenray examinations. Finally, more than 200 pages are devoted to examination of the nervous system, this being one of the most excellent features of the work. There is scarcely a name in connection with any of these subjects that cannot be found in the 40-page index. Dr. Sahli calls especial attention to the fact that the book is not a mere compilation but is based on his own experience. He does not endorse the usual method of bringing out every new thing in current journals and then making of a book only a digest; if this idea were adopted by every author there certainly would be an increase in quality and decrease in number of medical books.

The translation of this work has been well performed and the editing has added to its value. The book is of a distinct addition to medical literature and the appearance of an English edition is a matter for congratulation.

Baby Incubators.—By JOHN ZAHORSKY, A. B., M. D. Reprinted from a series of articles in the St. Louis Courier of Medicine, 1905. St. Louis Courier of Medicine Company.

This book of 136 pages furnishes in assembled form the instructive articles based on the writer's experience with premature infants while in charge of the incubator on the "Pike" at the Louisiana Purchase Exposition. As he states, however, though it is based on institutional work the principles discussed apply to premature infants anywhere. The book is very practical and will prove of great aid to any physician in charge of such cases.

A Guide to Anesthetics for the Student and General Practitioner.—By THOMAS D. LUKE, M. D., F. R. C. S. (Ed.). Second edition. J. B. Lippincott Company, Philadelphia, 1902.

In the second edition, the author has revised the book slightly in general, and has especially referred to the introduction of ethyl chlorid as a general anesthetic which has occurred since the first edition. The author has covered quite thoroughly the methods of using the various anesthetics, their special advantages and dangers. Because of its somewhat set form this book would be more useful to the student or beginner than to the more experienced anesthetist.

Surgical Aspects of Digestive Disorders.—By JAMES J. MUMFORD, M. D., in association with ARTHUR K. STONE, M. D., with an Appendix by HENRY F. HEWES, M. D. The Macmillan Company, New York and London, 1905.

The authors have produced an exceptionally readable and interesting volumn. The combination in authorship of surgeon and internist, has brought forth a treatment of the subject both from the medical and surgical standpoint on an exceptionally fair and broad basis. A brief history of the ancient conceptions of the digestive organs, their functions and diseases is given. Methods of examinations and their values are discussed and the various diseases of the stomach, duodenum, bile passages, pancreas, abdominal ptosis and the vermiform appendix are fully considered.

CORRESPONDENCE.

SOME PRACTICAL HINTS REGARDING MEDICAL POSTGRADUATE STUDY IN BERLIN.[1]

BY

JAMES N. VANDER VEER, M. D.,
of Albany, N. Y.

To the Editor of American Medicine:—The majority of physicians in the United States, it is safe to presume, have peculiar ideas of postgraduate work as pursued in European cities; and it is for the benefit of those chiefly who have never been abroad but are looking forward to the time, not far distant perhaps, when they may have the good fortune to pursue that such work, I contribute these few hints concerning Berlin.

Most of us hear of but three large cities, Berlin, Vienna, and Paris, where such work is given on a large scale, but among the physicians who have studied abroad we occasionally meet one who has discovered some small city in which a special line of work is being carried out with the highest degree of efficiency and skill. However, we must acknowledge that it is in the larger continental cities that we find the greatest amount of material at the disposal of the profession, and hence the grouping of men interested in postgraduate work is always where the material is most plentiful, while the question of superiority of teaching in any given branch must necessarily be left to individual opinion.

Of the three large cities mentioned, Berlin ranks second, at least in the scale of diverse material, as presented to the student by the many wellknown leaders in German work, and in the direct manner of presentation. With its 3,000,000 or more inhabitants (including therein the immediate adjacent towns) and its situation as capital of the German Empire it would be a tedious task to estimate the number of clinical patients treated annually within the portals of the numerous hospitals, clinics and polyclinics, as the methods of keeping track of the cases vary with each clinic. The cases presented to the students are mainly from the middle and poorer classes of people, but in some instances one comes in contact with the wealthy merchant class.

This material appears at the polyclinics, in general from four sources:

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[1] These notes are gathered from a six weeks' trip through France, Switzerland and Germany, followed by a three months' residence in Berlin, in the summer and fall of 1904 and eight months' residence in 1905.

1. By reason of this or that particular polyclinic having the general care of the "Kranken-Kasse" (Sick Benefit Society) to which the patient belongs. In this way a large majority of patients receive treatment, as the poorer classes join these sick benefit societies in great numbers and pay but a small sum each week, receiving therefor free treatment, medicines and all medical and surgical appliances when needed without extra charge. Each polyclinic, save for those connected with a hospital or with the University or which partakes of a "semiprivate" character, is thus practically supported by a Kranken-Kasse, which contributes a stated sum for each patient and for each appearance of that patient in the polyclinic. In some polyclinics this stated sum is very small, 1 or 2 marks (25–50 cents) for the first appearance and examination of the patient, 10 to 50 pfennigs (2½–12½ cents) for each subsequent treatment. In polyclinics of this character the services of the attending men are gratis, while each chief accepts from 1–5 physicians each month as clinical assistants, receiving from $10 to $20 each month from each assistant in exchange for the instruction given in this special branch of work. But in a few of the polyclinics the receipts are large and partake of the nature of a semiprivate affair conducted by a regular organized body of physicians.

2. By reference of a patient to the special branches in each polyclinic from outside physicians. As a general rule physicians have but few nonpaying patients under their care, outside of the polyclinics. When a patient is unable to pay for medical attendance he is usually referred to a polyclinic for treatment.

3. By patients coming voluntarily to the polyclinic nearest their homes. One sees among this class of cases, patients able to pay a very nominal sum, but who have no regular physician, and who seek a particular polyclinic in order to obtain the services of men of whom they have heard.

4. By patients who have received benefit from some specialist in the polyclinic and who refer their friends for all manner of ailments to that specialist. By a second reference the patient comes into the hands of the proper physician in that polyclinic and receives treatment. This class includes in the main the poor and ignorant, though one occasionally sees a semiprivate patient among the number.

The University also has a series of clinics in every branch of medicine. These clinics are supported by the government and by the semiprivate patients, resembling in the main our own city hospitals and dispensaries.

In a rough estimate of the various polyclinics made from the enumerations given in the various publications there are no less than 25 recorded, not including the private ones, while the divisions of each polyclinic, and the various clinics for special branches are numbered in the hundreds.

At one of the polyclinics which it was my good fortune to have stumbled upon when following out the subject of surgical diseases of the bladder, etc., I was privileged to see and examine 53 patients treated in two hours by the chief of the clinic and his 5 assistants. On this day there were no less than 10 cystoscopies or ureteral catheterizations done, to say nothing of a multitude of endoscopies; but this attendance was a record breaker, as the usual number averaged but 25–30 cases a day (including 5–10 new ones), the remainder being mostly chronic conditions.

A second clinic on surgery, conducted four times a week, yielded no less than four operations in the two hours of each session, most of these operations being of the major class.

In this way one can gather but a general idea of the amount of material disposed of throughout the various clinics and polyclinics in the city, but one can readily appreciate that it is enormous and that the facilities for studying cases in many of the specialties are of the best.

Before entering satisfactorily on a course of postgraduate work in Berlin it is naturally a prerequisite that the student have at least a speaking knowledge of the German language, the more fluent one is, the better are the results obtained. While a number of the clinic chiefs and regular assistants speak the English language to a very limited extent, and understand it much better, it is not for a moment to be expected that a practitioner can derive much, if any benefit when only English and the usual Latinish medical terms are to be depended upon for means of communication. It is also to be recommended that the practitioner become familiar with the old German script if he wishes to peruse the clinical records, for but few of the records are written in the socalled new, or Latinish script.

With such opportunities of study at hand, it is but natural to ask the question as to who gives the best courses in the various branches. For one to depend upon the courses as taken by some friend years ago is but a poor way to grope around, as conditions, in the matter of the teaching ability of one man and his assistants, the present amount of material at their disposal, and the manner of presenting the same are constantly changing.

Again to depend upon the books which are purchased giving outlines of the various courses, is very unsatisfactory by reason of the multitude of polyclinics; and for one to attempt attendance on the various clinics in a given subject before enrolling, is wellnigh impossible without a perfect knowledge of the language, the city and the characteristics of each chief and clinic, to say nothing of the loss of time.

It must be surmised, therefore, that a ready means of communication has been discovered whereby one can quickly grasp the possibilities of each clinic and the various means of instruction. This can be done, however, in numerous ways after the prospective student has fixed firmly in his mind just exactly what lines of study are to be followed. And here it is of the utmost importance to remember that "specialty in everything" is pushed to extremes on the continent and it is better to select some few special subjects in the several branches of medicine desired, as "special pathology of carcinoma"; "the eye"; "the ear", etc., rather than to plan an outline of several kinds of work as in "surgery of the abdomen" (for this is already divided into branches) or in "general medicine," save as one wishes simply to see an innumerable number of cases presented clinically without time for examining closely a single case.

Information can be had of the various clinics by:—1. Presenting one's card at the clinic with an accompanying card from an American physician who is personally known by the chief or one of the assistants. This invariably presages a cordial welcome for a short stay. 2. Having one of the students of a clinic give a personal introduction to the chief. This also assures access to the clinic usually for a lengthened stay or repeated visits over a long period. 3. Visiting at the clinic desired. In most cases entrance is easily obtained by presentation of one's personal card, when the chief is usually glad to grant the privilege of a visit for a few days. This manner, however, is rather frowned upon by the majority of clinic chiefs as several have been imposed upon by simple medical students sojourning in Berlin and in rare cases by men who were not physicians at all.

In this connection it is not amiss to speak of the Anglo-American Medical Association of Berlin, which has filled a long desired want in the professional work of English-speaking physicians when visiting or studying in Berlin. This organization, exceedingly variable in the number of its active members meets each Saturday evening at 7:45 in a special room of the Heidelberger Restaurant of the Central Hotel. Its members gather at this hour, partake of an evening meal according to their individual fancies, and discuss the work pursued by each individual, the character of each clinic and their various methods of presenting cases; and thus impart valuable information, especially of new courses about to be given which can readily be appreciated by any newcomers who have not as yet started to work.

Following this social part a lecture is given in German by one or another of the wellknown medical professors or assistant professors of the University on some special topic, usually arranged for and announced in the week previous. Hence, in these various ways, is interest kept alive among the students and aid given to the newcomers. They also maintain a reading room with the latest journals. The president now holds office permanently and is Dr. J. H. Honan of 78 Lutzowstrasse and all communications are sent to him.

A second feature is also to be noted. In the fall of 1904 the Nu Sigma Nu Fraternity, well known in the United States through its chapters in various medical colleges, established headquarters in the Alexandra Hotel on Mittelstrasse 16 and 17, hoping thereby to form a nucleus of English-speaking physicians whereby information could be imparted concerning the courses and other matters of interest to newcomers.

By both these means a newcomer can come into direct touch with men who will gladly put him on the right track and save much vexation and worry, to say nothing of lost time.

It is a matter of prime importance to the student to choose his work insofar as is practicable in polyclinics near to each other and not far distant from his room, so that there is wasted only the minimum of time in walking from one clinic to another. And as there are peculiar laws and regulatious regarding the changing of one's room it is best to select a permanent location in the quarter nearest one's work. While the polyclinics and clinics are widely scattered throughout this large city, yet most of the work is done in a space whose limits are bounded by a 20-minute walk from the center of the city, namely from Unter den Linden. And owing to the numerous restaurants scattered throughout this, the business center of the city, the matter of food is easily solved.

In a paper of this length it would be amiss to omit some of the various courses given and it might be well to enumerate the manner of their presentation. Hence the following will be found of aid:—

(1) *The University Courses.* The "Friedrich-Universitat zu Berlin" is located on Unter den Linden some three blocks east of Friedrichstrasse.

The attendance during the winter semester, October to April, is in the neighborhood of 7,000 actually enrolled students alone, while some 6,000 attend as "hearers". The summer semester is from the middle of April to October. Matriculation costs $5 and is to be accompanied by diploma from a medical school and by a passport of the United States for those physicians who wish to avail themselves of the University courses. Students are referred to the volumes headed "Das Medizinische Berlin" (published by S. Karger, Karlstrasse 15, and costing about 20 cents) for further information regarding the rules and regulations; and to the "Verzeichnis der Vorlesungen" (published by Oscar Rothacker, Friedrichstrasse 105 B, and costing about 15 cents) for a list of the courses.

In this connection might be mentioned the fact that the expense of each course is very low and that the majority of the work is in the various and larger clinics.

(2) *The Ferien Courses for Physicians.* These are two sets of lectures given in the vacation periods of spring and fall of each year, usually the last of April and of September, by members of the "Dozentenvereins für Ferienkurse," (Society of Privatdocents) who are in the main, the assistants at the various clinics and polyclinics.

The lectures and practical sessions are given for a period of 4 weeks at stated hours each day and one can select a course on almost any subject and under a variety of teachers of repute. Of necessity the lectures are on somewhat advanced work and contain usually only the cream of the subjects under consideration. It is an excellent way to learn the newest and most practical advances in the various branches of medicine and to brush up on any particular subject.

The expense of each course varies with the teacher, but in the main the cost is from $10–$25 for 24 or more actual hours of work. Information concerning these courses is readily obtainable by visiting or addressing the secretary, Herr Melzer, who dwells in the Langenbeck Haus, Ziegelstrasse 10. Registration for these courses is through the secretary and is best performed at the earliest opportunity as some courses are limited in the number of students.

(3) *The Monthly Courses.* These are abundant, many of the polyclinics being devoted to this sort of work alone. Each course lasts a full month, the members are usually limited in number to two or four. Registration is with the clinic chief direct and is best performed early owing to the limited number allowed in the clinic. The majority of the clinic chiefs are connected with the University, but occasionally one finds a polyclinic run entirely by men not so connected and yet anxious to come in contact with the practising physicians of other countries, and provided with an abundance of material. The prices are about the same as in No. 2.

Reference is made to these courses in the first book under heading number one.

(4) *Special Courses.* These can be obtained in almost any subject and at any time from a number of men, but usually the better teachers prefer students to search out and take the regular courses. Students combine into a group of from 2–6 and go to the man selected and arrange the hours. There is a fixed price for each course and it matters not whether one, two or more take the course save there is always a maximum limit. The cost of the course is then divided between the students. The hardest courses to get, sometimes many weeks' waiting being necessary, are in general surgery, because of the specialism which prevails.

From these few hints it will be noted that one can obtain work on almost any subject in the months September to May inclusive; that it is best to arrive in Berlin during the early fall and survey the ground for a week or so before making any definite plans; to bear in mind that the courses are not given in a large hospital or medical college but rather in smaller polyclinics covering a large area of a large city; and finally that the work is clinical and not didactic.

THE VENEREAL PERIL.[1]

A Letter From a Physician to His Son in College.

My Dear Frank:—

You are approaching a critical period of your life which demands a word from me. Your first taste of comparative freedom is gained when you enter college and you are to be still further unrestrained in your first vacation. At your birth you were carefully guarded from harm, and those guards were gradually relaxed as you developed abilities to protect yourself. You are still in an immature mental state in which you need help—a help which I expect of the college authorities. From your letters I presume that the college is doing its duty by you in the same way I would have done or even better, but now they temporarily return you to me. If you were 15 years older, or even

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[1] This letter from a physician to his son in college seemed to us to deal with the matter of sexual education so admirably that we have obtained permission to publish. It will be electrotyped and copies will be for sale at any time by this journal.

10, or perhaps but 5, you would instinctively see the dangers which will surround you and no word from me would be necessary, but as you will be thrown on your own judgment to a large extent, I must step in with some advice.

I do not refer to alcohol, as I believe you thoroughly understand its dangers—though I stooped to a bribe to impress them upon your mind. The money you receive every year you abstain, is for the express purpose of tiding you over the growing mental years during which alcohol is especially harmful. I cannot say that a trifle of alcohol with meals is harmful to a mature man, indeed it might be distinctly beneficial to a few, but I do know it is not needed by youths and moreover is likely to lead to incurable drunkenness. The majority of drunkards are made so before their thirtieth year and possibly before their twentieth.

I have failed to convince you that tobacco is harmful to the immature nervous system—and I place maturity at 25 in this respect. My failure has caused me much self-accusation, for I somehow blame myself for not convincing you. The injury, though slight, is nevertheless an injury which it is foolish to endure. In addition the expense is not wise for people struggling for mere existence. A few pennies saved may give you just the advantages you need some day, and the loss of the money to be given for abstinence will some day be severely felt. Tobacco is a benefit later, no doubt, if used moderately, but it is the part of wisdom to abstain in early years.

The dangers to which I refer at this critical time are wholly sexual, for you are now likely to meet your first serious temptations, which might cause great suffering if not ruin. There is now a medical discussion going on as to how college men at your age and advancement should receive sexual instruction; for that they do need instruction cannot be denied. It is a delicate subject which has been avoided heretofore and college authorities though also unanimous in opinion that something should be done, are wholly at sea as to how and when to take up the matter. It is unfortunate also that laymen are themselves wofully ignorant of the subject. They have had no instruction in their own youth and have imbibed many false ideas from the wretched quack literature published for fraudulent purposes, and skilfully worded to work upon the fears of young men at an impressionable age to cheat them of large fees for useless advice and worthless medicines. There is therefore a growing impression that the duty is one belonging solely to the medical profession and I have been making a search for literature which might properly be placed in your hands, but I find that there is nothing suitable. The best published so far, is the series of lectures delivered yearly by Professor Erik Pontoppidan, of the University of Copenhagen, to his classes. These are unsuitable for you because they are intended for medical students of more mature years and they are somewhat marred by the coldly professional tone which is unconsciously assumed by a physician who has spent his whole life in the treatment of venereal diseases. He has neglected somewhat both the scientific and moral issues involved. Still I think that no harm can come from reading them and I enclose them that you may learn some of the details which are too voluminous to mention here. The other pamphlets written by physicians for young men and boys are tainted by an exaggeration bordering on hysteria and I am quite of opinion that they give a false impression and are also more likely to cause a smile than serious thought.

The most pernicious things in existence are quack pamphlets designed for mere boys, describing the alleged harmful results of certain acts common to the young of all mammals. On account of a natural repugnance, public opinion positively prohibits a scientific discussion of this topic. It is therefore practically impossible to give that wide publicity to the truth which will clear up current misconception. The quacks have the field to themselves, frighten boys into writing letters for advice, and these letters are then sold to some other scoundrel who repeats the scare and after he has squeezed all the money he can from the poor boy, he sells the letters over again to a third, fourth or even fifth criminal after which they are of no further value. There are millions of these letters in existence and the trade in them is a long established form of swindling. Immense sums of money are thus stolen from scared boys, and why? simply because of an act which is common in the immature and of which public opinion forbids enlightenment.

Masturbation often exists in the young of the lower animals and in many of the adults, but the reasons for its existence are wholly unknown. If it were as deadly as the quacks assert, the animal world could hardly have persisted until now. It is a proved fact that in our development we pass through stages of existence which epitomize our past evolution from lower forms of life and the boy therefore has an animal and then a savage stage, in which it is not at all strange that he should act like an animal or savage—and he does.

In addition, as childish intelligence grows, the mind normally investigates feelings, passions, and organs—only imbeciles take no note of new phenomena. The childish mind has no checks to its wanderings and it therefore leads to acts which disappear as maturity approaches. It is a wise nature that protects us from harm in many ways, and in this she is not remiss. Though the acts are unnatural and harmful in later years, yet there is some unseen agency protecting the immature. It is natural then, as the mind matures, that the boy should be much worried over the past and feel that in some way he has been ruined. This is the time he is sure to read some of the dreadful advertisements as to lost manhood from early indiscretions. As all boys pass through this period of worry, the quacks are sure of many victims whom they would not secure, if we were able to convince the poor scared creatures that the damage is remediable by healthy outdoor living, good food and clean thinking.

When the brain is congenitally warped or becomes diseased, and insanity shows itself, all the perceptions are more or less unbalanced or perverted. Sounds are heard, strange tastes lead to thoughts of poison, visions appear, and false ideas become fixed. The sexual instinct is also perverted in nearly all cases, and the idea, therefore, arose that these unnatural acts were causes of the mental abnormality or the insanity, whereas they are results which did not appear until the mental condition was well established. Hence we have a flood of literature still further frightening the boy, who becomes thoroughly convinced that insanity is his fate. The useless suffering thus caused is so great, that we are almost justified in teaching that those early indiscretions of boys are harmless—or of some unknown use; though, of course, we cannot yet conscientiously do so.

The great temptation which you are sure to encounter is the foolish assertion that sexual congress is necessary for health—a most pernicious doctrine carefully kept alive by those who live upon the trade of prostitution either directly or indirectly. It is the opposite of the truth, for we know that the whole sexual apparatus, including all the brain and nerve centers involved, will remain normal permanently without intercourse. Moreover, it is known that hard work and clean reading repress passions, while idleness, unclean literature, and lascivious dramas excite them to an abnormal degree, and that neither state has much if any permanent result upon the tissue beyond conserving or expending energy. Continence, then, means better ability to struggle for existence and may be the means of gaining that success in life unattainable by the lustful.

Nature, here, again, is our friend. The testicles secrete semen constantly and it is stored up in little reservoirs situated behind the bladder. When they become distended the semen simply passes into the urine or is forced out during sleep. As this goes on during the whole life, it is evident that these are not "losses" as the quacks state, but normal excretions neither harmful nor harmless. The number of these discharges may be looked upon as a man's personal equation—they may be but one a month or less, and I have known perfectly strong healthy men to have several every week of their lives. It is easy to convince a thoughtless boy that he is losing his manhood, and untold thousands of dollars are foolishly spent to cure nature. What is far worse, they are told that sexual intercourse is demanded, and the poor boy is steered into the clutches of the prostitutes for possible infection with venereal disease.

And this brings us to the reason for this long letter and the reason for this new crusade of instruction in the sexual life—the utmost necessity for avoiding the prostitutes in modern civilization with its delayed age of marriage. The amount of disease and death resulting from "the social evil" is so appalling that it is rightly called the "great black plague." Every prostitute is infected with venereal diseases some time in her career, and usually often the majority, even though they show no symptoms, are found to harbor the germs, and they thus spread broadcast the diseases which are playing such havoc in other walks of life. Throughout the whole civilized world, an earnest organized effort is now being made to restrict this evil to a minimum.

The scientific reasons for the rise and persistence of prostitution cannot be given here, as it is too large a subject. It is sufficient to say that the institution has existed for some reason in civilization for thousands of years and will probably last some thousands more. Present efforts to eliminate it are unscientific and absurd so we must devote our whole energies to teaching boys its dangers and inducing them to avoid it. It is one of the things which kills off the human race, and like all other injurious things it will disappear when we can induce people to avoid it. There seems to be an impression among many college students that some acquaintance with prostitution is a necessary part of their education, and you will no doubt be asked to join in such parties "to see the world." That is the critical temptation to which I have alluded, and when it comes I beg you to resist it.

The three main venereal diseases, gonorrhea, chancroid, and syphilis, are sufficiently described in the enclosed pamphlet, so I need merely direct attention to the curious paradox as to all of them which leads to such diametrically opposite popular opinions. In strong, hearty, healthy young men, gonorrhea may sometimes be a self-limited disease, lasting some four to ten weeks. Such patients get well with little treatment if it is scientifically given. Soldiers are of this class and many of them recover with little care, and for those who do come to hospital but little may be required. For some years a few physicians have given these patients no drugs whatever, merely washing out the penis many times a day with very hot water, for the germ is killed by a temperature of 113° F. These exceptional cases have given rise to a widespread opinion that the disease is "no more serious than a bad cold." The actual fact is the reverse; for if there is not a perfect condition of health the man has no resistance. The germ is not killed by his tissues as it should be, so that it flourishes and spreads to the bladder, kidneys, heart, joints, and brain. Indeed there is no part of the body that can escape.

As a practical professional matter then we regard the disease as most disastrous. It causes untold numbers of deaths under other names. The germ may lie hidden for years and infect innocent wives so that 80 percent of surgical operations on women are due to its ravages. The damage is so great that the popular literature on the subject always assumes an hysterical tone. This is why we state that every case should be under the careful attention of a skilled and learned physician, avoiding the dangerous or useless medicines of the quacks. You would be appalled at the enormous numbers of cases of chronic invalidism and deaths due to neglected gonorrhea. The prostitute herself lives in that life only nine years and one investigator says but five. Some say she dies of alcoholism, but the more common opinion is that the cause is gonorrhea. Most of them are degenerates—the female equivalent of that male criminal. Indeed they are mostly criminals themselves, of poor health, poor physique, neurasthenic, unable to work, unable to resist the ravages of any disease—and consequently are easy victims of this one. In addition they are generally of feeble intelligence, uneducated and unfit for civilization—the rejects—and it is degrading even to meet them.

Now you have the reason for those remarkable differences of opinion about gonorrhea—with a few it is remarkably benign but with the majority it is severe and difficult to cure. With a large number it is one of the most serious diseases afflicting mankind, sometimes impossible of cure and causing a very large proportion of deaths.

The same statements, though to a much minor degree, may be said of the ulcer or sore on the penis—soft chancre, or chancroid (like a chancre). It is due to a variety of germs which cause ordinary abscesses, boils, etc. Many doctors treat them in only one way—irrigating them with very hot water many times a day. They heal up very promptly that way if done properly—I have had some cases to treat in which I was compelled to seat the patient all day in a bath tub full of water, to have the sore constantly washed. Neglected cases are very severe and cause abscesses in the groin, sometimes a general blood poisoning and even destruction of the penis.

In syphilis, too, we have similar contradictions. The disease is due to a microscopic germ recently discovered. It is almost surely killed by minute doses of mercury in some form, and in no other way. It requires a highly skilled physician to treat it properly. The malaria germ is killed as a rule by minute quantities of quinin circulating in the blood, but sometimes this fails and the disease requires management exquisitely careful. While we look upon malaria as a very minor affection, it can become dreadfully severe and is often fatal. Syphilis is similar in a way, easily cured but requiring much longer time—two or three years or even more. The danger of this disease is the larger number of chronic diseases of nerves and brain caused by it in after years; so that a good physician should manage each case to be certain of cure. In the last century syphilis was much more serious than now. The germ seems to be feebler and more easily destroyed by the mercury salts, but that must not blind us to its ultimate fatal results if not properly treated. I have scant respect for those popular articles for young men, describing the disease as always incurable and sure to appear in the second or third generation. That is not true at all—the cases of hereditary syphilis are very rare in comparison to the numbers existing, and are contracted only in the early stages of the disease.

The venereal diseases, particularly gonorrhea, not infrequently result in sterility of both man and woman. What is called "one child sterility" is dreadfully common. The young wife becomes pregnant and at the same time is infected with the husband's latent disease, and it destroys certain tissues after the baby is born, making further conceptions impossible. Male sterility is frequently due to gonorrheal inflammation of the testicles, and it is not generally known either.

Now for the moral side of the matter. What religious and moral instruction you have received should have convinced you of the immorality of the conduct usually dismissed as mere sowing of wild oats. I cannot add more to that except to say that morality is the crystallization of natural law—an ideal, the violation of which is unnatural and therefore harmful. It is somewhat reprehensible to place morality on such a selfish basis—but it is more than selfishness, it is the welfare of others. I suppose you will marry in time, and you must consider your future wife and children. You do not wish to injure or kill her, and I have seen many a woman ruined or killed by infections supposed to have been cured prior to marriage. Should you have children, their welfare demands that you be in the pink of physical condition that you may support them and give them as good a start in life as your natural abilities permit. Any faults committed now may react 25 years later. Hence morality is really looking after yourself and others now and in the future. Children have a natural and therefore a moral right to demand perfect physical health of parents—otherwise they are cursed by being brought into the world.

I hope, my dear boy, that this letter does not give you the impression that I presume you will necessarily become an immoral man. If it has, I would prefer that it had never been written. It is merely to point out a danger which is to confront and surround you for many years—a danger which you would naturally avoid as you grow more mature, but which is not recognized by college boys as so serious that it wrecks an appallingly large percentage of American families.

Physicians are beginning to call attention to the dreadful increase of immorality and disease in the larger universities—matters which necessarily cannot come to the notice of the faculty. It is in part due to the fact that so many of the new-rich send dangerous amounts of money to their boys at the very time of life when the least is known about using it. It is a vain wish but a good one, that the big colleges could be broken up into small ones situated in the country districts of the north where the boys can live a normal natural outdoor life in a dustless atmosphere. Cities are deadly places anyhow, and should contain only those technical colleges which need city material for instruction. Your choice of a small college was wise, I can assure you. The more opportunities there are for healthy outdoor sports—not the ones requiring a nerve exhaustign "training"—the more able will a man be to resist the temptations to which I refer. Beside that, the scholarly atmosphere of a small college town is not only good of itself but is conducive to a mental state which aids one in resisting the moral pitfalls met later when you take up city life.

I think now I have said enough. Much preaching is a nuisance and defeats its own purpose—for a word to the wise is sufficient. Live a clean, outdoor life, as active as circumstances permit, eat good food with sufficient animal ingredients, sleep at least nine hours a day—and your body will behave itself in every part. Don't worry over imaginary conditions and believe me that sexual continence is normal. Above all, take my word for it, that the dreadful quack literature on sexual matters is mostly false, and is prepared by criminals for swindling purposes solely. Certain newspapers are public enemies in that they yearly absorb millions of dollars for advertising the sexual swindlers and most of the money is filched from the pockets of mere boys. These newspapers, owned by supposedly moral men, are really very criminal and invariably oppose all efforts to protect the youth of the country.

Certain people survive in spite of very limited intelligence because *they take no risk*—learn that lesson at once. To be sure, mere length of life is not the only consideration—it has width and thickness too. Its width is the broadness of view coming with a wide range of living and its thickness is the work yearly accomplished. Alexander's 32 years of life were a million times bigger than that of a narrow-minded farmer of 90 who had never left the plow handles. But length of life is the natural desire after all is said—and we cannot believe that a few glorious hours are worth "a cycle of Cathay." Whenever a companion says he believes in a short life and a merry one, put him down as a fool and leave the room. The only good such people do is to enrich the undertakers.

Your affectionate

DAD.

Tuberculosis Hospital for Boston.—A commission has been appointed by the Mayor to formulate plans for a hospital for consumptives. Public sentiment is in favor of an institution for advanced cases since incipient cases are now very well provided for in the vicinity of the city.

THE PSYCHOLOGY OF THE MALAY.

To the Editor of American Medicine:—In reference to your excellent editorial of March 17 anent the Pendleton case, if the following is of any use you are at liberty to use it:

A native policeman was murdered on Thanksgivingday night in Cebu. The city is very antagonistic to Americans. At two in the morning a native policeman came to the French Hotel and offered to drive a constabulary officer home. The officer (Pendleton) was very drunk and unable to get home. The native instead of taking him home took him to the constabulary cuartel where a native soldier was waiting. He told Pendleton that a native had been murdered and was lying in the road. Pendleton went inside, got four armed men, and with the native as guide went to the spot a half mile distant. He fired two shots in the air on the way and showed other evidences of drunkenness.

The five natives were the only witnesses against him. They confessed to holding a conference in order to make their testimony agree, and also that they had been coached by the native prosecuting attorney. Their testimony even then did not agree, but in the main was to the effect that Pendleton shot the policeman with a carbine at three paces, and the man fell in his tracks and never moved. Pendleton's shoulder strap with two empty shells and a cartridge were placed near the body.

Two army surgeons testified that the wound could not have been produced in this manner, that death was not instantaneous, and that the body had been dead a longer time than they claimed. Also that the wound was probably made by a revolver. Two native physicians testified that the death was instantaneous "because the liver was wounded." The bullet actually struck the right tenth rib in the anterior axillary line. dented it and deflected under the skin over the eleventh rib, then followed the belly wall around to the corresponding position on the left side, where it emerged. The judge has been some time in the islands. He was also interpreter, as well as judge and jury. The trial was conducted in Spanish and Visayan.

Some time ago a native at Ormoc murdered the principal of the school there and also stabbed an American woman teacher. With difficulty he was sentenced to life imprisonment. (Though I believe he is now at large.) This aroused great indignation among the natives. His reason for the act was because he had failed for promotion.

At Cebu an "election" for governor was at hand. The American judge favored the native district attorney who was under his control. A similar conviction of an American to balance the Ormoc verdict would elect him. Notice was given out that Pendleton would be sentenced at a given time and the place was crowded with natives. He was dramatically sentenced in two languages to life imprisonment and $3,000 fine. He was privately recalled and given 20 years, which is the legal limit, but the natives do not know of the second sentence. A few days later the district attorney was triumphantly elected governor, and is now in office.

Pendleton has appealed to the supreme court of the islands but has no money to have even an English brief. Three of the supreme judges are natives, and the evidence from the lower court comes up in such a way that it is difficult to see how his case can be fairly presented. Althongh a drunkard, Pendleton is an American, and his conviction in an alien tongue without a jury, and on exclusively native testimony for political ends, is contrary to political morals.

Incidentally it may be mentioned that the circumstantial evidence was exceedingly strong in Pendleton's favor, and the policeman was probably murdered by his fellows.

CORRELATION IN MEDICAL TEACHING.

BY

L. HARRISON METTLER, M. D.,
of Chicago, Ill.

To the Editor of American Medicine:—In the issue of *American Medicine*, February 10, 1906, appears an editorial under the caption "Correlation in Teaching is Desirable" in which the statement is made that "no satisfactory work" in which the correlation of physiology, pathology and clinical medicine is made the prime object, "is now published." This is true in regard to English textbooks, though not wholly so. Your editorial is based upon Dr. W. S. Hall's paper regarding pathologic physiology, that appeared in the *Journal American Medical Association* of December 30, 1905. Dr. Hall's own recent work upon physiology devotes a large amount of space to the teaching of the correlation of physiology and clinical medicine, and in his article in the journal he calls attention to Krehl's "Pathological Physiology," the translation of which has just been completed by Dr. Hewlett of Johns Hopkins University. As Hall says anent this magnificent work, "Professor Krehl treats this subject from the standpoint of the clinician following the classification of the pathologist and harmonizing his treatment at every point with the latest findings in physiology."

I want to call your attention to another work, recently issued and therefore not yet translated into English, in which physiology and physiologic anatomy are made the basis for the presentation of clinical diagnosis. Though limited to the field of neurology it is the only work of the sort that I know. I refer to Grasset's "Les Centres nerveux: Physiopathologie clinique," issued last year by the Bailliere house of Paris. Grasset boldly discards the old and somewhat arbitrary anatomic divisions of the nervous system, and adopting the neuron, as we know it today, as the physiologic unit and its multiplication and association in the various apparatuses of sensation, motility, trophism, etc., as the fundamental organs in the workings of the nervous system, he studies the diseases of the nervous system under the following heads:

1. The central nervous apparatus of motility and general sensation. 2. The central nervous apparatus of orientation and equilibrium. 3. The central nervous apparatus of language. 4. The central nervous apparatus of vision. 5. The central nervous apparatus of hearing, taste and smell. 6. The central nervous apparatus of the circulation, the secretion, the nutrition, the digestion and the respiration.

The apparatus for the expression of psychic phenomena is also taken into consideration.

A work such as Grasset's, being based upon the frank and rational recognition of the fact that physiology—the science of the *living* man—rather than anatomy, the science largely of the *dead* man—should govern the diagnosis in clinical medicine, illuminates the dark places of neurology, places ofttimes made darker by the old anatomic and arbitrary nomenclature still adopted in most of the textbooks now in use.

Before Grasset's book, with its radical yet rational method, had appeared, I had already made an attempt to present neurology along the same lines in my "Diseases of the Nervous System." I followed the functional rather than the mere anatomic classification of the diseases.

In one respect clinical medicine has been undergoing a great change during the last few years, but like all such movements it has provoked the usual hue and cry of opposition on the part of the unthinking, the uninformed, and the unprogressive conservatives. The guidance of physiology rather than of mere anatomy is being adopted in the realm of clinical medicine. See for clear evidence of this the writings of Putnam, Mills, Dana, Prince, Cowles, Hall, Chittenden, Campbell, Ziehen, Krehl. Grasset and many others. As Claude Bernard long ago said, "there is only one science in medicine and that science is physiology applied to the state of health as well as to the state of disease." Lepine wrote that "it is superannuated to think anatomically" any more. As Cowles truthfully says, "much disharmony in the conceptions of pathology has been due to the setting up of ideas of 'organic diseases' as the chief factors in pathology and the minimizing of function as worthy of serious scientific consideration." In the words of Grasset: "Clinicians still continue to study, in separate and successive chapters, the functions and diseases of the cerebrum, the functions and diseases of the pons varolii, of the cerebellum, of the spinal cord—whereas for the physiologist and the clinician these divisions no longer exist and are not real."

A sick man being still a *living* man it is obvious that our deductions had better be made upon the basis of that science which studies the living, functionating organism. This is what a few of us are trying to do in our writing and teaching. In time it will undoubtedly be recognized and adopted as the only true method for clinical medicine to follow—adopted by the whole profession.

Cholera in the Philippines, although more virulent in its outbreak than the epidemic of 1902, according to late advices has been got under partial control. The sale of foodstuffs that have been liable to infection has been interdicted and it is hoped to confine the disease to the native quarters.

Vermont Has Decided Upon Reciprocity.—The Board of Medical Registration will issue licenses without examination to reputable physicians and surgeons who appear personally and present a certified copy of certificate of registration, or license, which has been issued to said applicant in another State where the requirements for registration are deemed equivalent to those of Vermont, provided such State accords a like privilege to holders of a license granted under the laws of Vermont. A registration fee of ten dollars must be paid.

Yellow Fever in Cuba.—Reports from Louisiana health inspectors resident in Cuba say that eight cases of yellow fever were reported during June. The Havana resident inspector also said that in a case of yellow fever in Havana, the patient had been ill for five days at Tacon market before the health authorities found out his condition. About 1,000 persons are employed at this market, many of them sleeping there at night.

ORIGINAL ARTICLES.

PENETRATING WOUNDS OF THE ABDOMEN, WITH REPORT OF CASES, INCLUDING A CASE OF TRAUMATIC RUPTURE OF CONGENITAL CYSTIC KIDNEY.[1]

BY
C. E. CALDWELL, M.D.,
of Cincinnati, Ohio.

In presenting this report of nine cases of penetrating wounds of the abdomen, I am actuated by a desire to contribute the results of my work along this line to the general stock of available information on a question, upon the correct answering of which, many valuable lives may depend, and a great many more perhaps not so valuable, except from an individual and biased point of view. There seems to be a consensus of opinion on one point, and that is, if the life of the victim of gunshot or stab wounds of the belly is of much consequence he will succumb, if not, he stands a good chance of getting well.

This very unscientific theory, if such it be, has a foundation in truth to this extent: The more highly organized and intelligent the individual, the more likely is he to add to this condition of physical shock and profound mental depression which comes from a fuller realization of all the remote possibilities of his misfortune.

As to the propriety of immediate operation in all cases of suspected penetrating wounds of the abdomen there will be heard hardly a dissenting voice from the surgeon of advanced views.

In all suspected cases of penetrating wounds, the patient should be immediately prepared for operation, the gravity and extent of which will be determined by free exposure of the wound of entrance by incision.

To the objections recently advanced by those who have witnessed the comparatively favorable results of noninterference in penetrating wounds inflicted by steel-jacketed bullets of small caliber during the Spanish-American and Boer wars, I can do no better than quote the opinion of Capt. Charles Edwin Belin Flagg, in the *Journal of the Association of Military Surgeons*. He says:

> In civil surgery, a case of supposed penetrating gunshot wound of the abdomen demands immediate exploration. If there is doubt as to penetration, the wound is laid open and if it is found that penetration has taken place further exploration is imperative.
>
> The same rule applies to military surgery. No larger percent of these cases occurring in war will recover, if left untreated, than of those occurring in peace.
>
> In civil surgery we do not wait to find out whether the man was shot by a steel-jacketed small caliber bullet that may have made a small aseptic hole in the intestines or may not have wounded the intestine. By what process of reasoning then is this urged on military surgeons?

But leaving out of the question the subject of military surgery, in which the conditions under which a patient is received and treated differ so materially from those of civil life, the question is, are there any real objections to be urged against immediate operations in cases of suspected penetrating wounds of the abdomen?

It has been argued by the ultraconservative that even in cases in which the bullet or knife blade has penetrated the abdominal cavity, we are by no means certain that any viscus has been wounded, and were it not better to wait until some symptoms pointing to such perforation arise before operating? The only answer to this question is that if we wait until we can be reasonably sure of visceral lesions, we would better decline to operate at all. I do not mean by this that we are to refuse to operate in cases in which definite symptoms of perforation have developed at the time when we first see them, but that if we have advocated a dilatory policy we would better be consistent and refuse to operate at all.

On what ground do the conservative people urge delay? On the ground that exploration only adds an additional risk in case there is no perforation. But even though there be no perforation is not the assurance that a thorough exploration gives worth anything? And does it really add much to the chances of mortality?

How are we to know when to operate and

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[1] Read before the Southern Surgical and Gynecological Association, December 12–14, 1905.

when not? It has been often enough demonstrated that multiple perforations may exist without any appreciable signs of shock, hemorrhage, or any other evidence of serious mischief.

A case in point is one reported by Dr. Ellsworth Elliot, Jr., to the New York Surgical Society. This patient, who had been shot in the abdomen with a pistol, showed so little evidence of shock that it was believed that the bullet had traversed the circumference of the abdominal wall without penetrating. An incision in the track of the bullet disclosed penetration. Opening of the peritoneal cavity disclosed ten perforations of the ileum. These were sutured and the patient made a good recovery.

Dr. John Young Brown, who reports nine cases of perforating gunshot and stab wounds of the abdomen with six recoveries, and five penetrating stab and pistol shot wounds with wounds of the liver, with four recoveries, says: "When a knife or bullet has penetrated the peritoneal cavity, there is but one method of determining perforation, and that is by means of an abdominal section and a careful investigation of the abdominal viscera."

If, then, serious visceral lesions may exist without causing pathognomonic symptoms what course is left to us but to assume in every case such lesions until their absence is demonstrated by exploration? Even with most careful search one lesion among many may be overlooked, as in Case V of my series in which the autopsy discovered a hole in the posterior wall of the stomach opening into the lesser peritoneal cavity, which under the circumstances detailed in the history of the case rather naturally escaped detection.

The only argument then that can be advanced against immediate operation in these cases is that the necessity for operation may not be present. Douglas, however, estimates the number of penetrating wounds associated with visceral lesions at 97 percent, and while willing to grant that this is a rather high percentage, yet it must be admitted that the chances are greatly in favor of intestinal perforation or other visceral lesions. In my own series of cases there were only four patients who might not have recovered without operation, but it will be noted that there was no mortality except in the two cases that were doomed either with or without operation.

As to the technic of these operations, I think every operator will be guided by his own judgment in selecting that method which seems most appropriate in any given case. The questions of flushing the abdomen or dry sponging, drainage or closure, one form of suture or another, must have and always will have their respective adherents and it is not my purpose nor ambition to discuss them here.

In conclusion I take pleasure in acknowledging my thanks to Drs. N. P. Dandridge, J. C. Oliver, and E. W. Walker through whose courtesy in permitting me to take charge of their respective services at the Cincinnati Hospital, I am indebted for the opportunity to operate in these cases.

CASE I.—W. H., aged 8, was seen in consultation with Dr. Edmund Shields. Condition on first visit: Child resting quietly in bed, suffering some discomfort in the abdomen. Examination revealed a small bullet wound made by a Flobart rifle ball. While impressed with the conversation that the ball had penetrated the abdomen, yet the boy's condition was so devoid of any appearance of shock and the caliber of the bullet was so small that he was treated expectantly. At the end of an uneventful week there was a sharp hemorrhage from the bowels, but the boy's condition remaining otherwise favorable, he was allowed to go on under expectant treatment. His recovery was prompt and uneventful.

CASE II.—J. C., aged 67, white male, occupation farmer. Seen in consultation with Dr. J. C. Cadwallader, July, 1901. Condition at first visit: Patient was somewhat nervous, having been told that I had come to operate on him. He had shot himself with a 38 caliber revolver with suicidal intent. The wound of entrance was midway between the xiphoid appendix of the sternum and eighth costal cartilage on left side. The patient had vomited blood, his temperature was 101° F., he was somewhat restless and complained of some pain. Believing there was perforation of the stomach an incision was made four inches in length over the stomach. A large clot of blood was found on the anterior wall of the stomach, under which I expected to find a perforation. Careful examination of the stomach and colon failed to reveal a perforation. The ball having lodged in the muscles of the back in a direct line with the incision and there being no evidence of perforation of viscera in the track of the bullet, the abdominal wall was closed after careful sponging of the stomach wall, and the bullet extracted from the back where it could be felt lying quite superficially. The patient recovered promptly. In three weeks he was about his farm duties and seemed to have been cured of any further desire to take his life.

CASE III.—J. K., aged 53, male, German, occupation policeman, entered the Cincinnati Hospital in the service of Dr. E. W. Walker, September 17, 1904, with a gunshot wound of the abdomen, received in the discharge of his duty. Condition on admission: Well preserved and well developed. Layers of subcutaneous fat excessive. General condition good. Pulse strong and full, rate about 100 per minute. Respirations, slow and deep. Patient rational and conscious. No vomiting. No cough or expectoration. Heart and lungs normal. Abdomen excessively fat. On the left side just below the costal border and about two inches outside of nipple line is a bullet hole about three-eighths of an inch in diameter with an area of bluish blood discoloration about it. Belly is not tender. Patient complains of some pain in the right groin.

Bladder catheterized. Urine clear and straw colored. Patient sterilized and sent to amphitheater, and at 5:45 p. m., an hour after entrance, I operated.

An incision was made in the track of the bullet and careful dissection was made down to the peritoneum through which the bullet was found to have penetrated. The incision was enlarged in the direction of the fibers of the external oblique. The peritoneal cavity was exposed by use of retractors. Careful examination was made of the adjacent coils of intestine. The direction of the ball being downward toward the pelvis, and no evidence of free gas in the peritoneal cavity having been detected, I contented myself with an inspection of such loops of the intestine as could be delivered through the abdominal incision. No hemorrhage of any consequence was noted. The peritoneal and muscular layers were closed with catgut and the skin with silkwormgut, a small drain of gauze being left in the bullet wound. Patient made a good recovery, was fully convalescent on the eighth day. A slight wound infection delayed his discharge until the fifth week when he left the hospital fully recovered.

CASE IV.—W. B., aged 21, male, colored, occupation student. Shot in the abdomen with a 38 caliber revolver in the hands of a friend while scuffling for its possession. Admitted to the hospital in the service of Dr. N. P. Dandridge on the evening of July 19, 1905. Condition on admission: Well developed and well nourished young adult. Heart and lungs negative. Temperature 97.6°, pulse 80, respirations, 24. Breathing thoracic. Abdominal tension slightly increased. On the abdominal wall on the level with, and one inch to right of umbilicus, is a ragged wound, edges blackened. Wound bleeds slightly. House surgeon after cleansing the wound inserted a probe but it did not penetrate the abdominal cavity. The probe entered downward, inward to medium line about three and a half inches. Failed to show penetration.

The patient was catheterized. Urine dark clear amber. Acid. Specific gravity 1,020. No albumin, no sugar, no casts. Two enemas were given, the last was effectual. The patient was prepared for operation and I was sent for. At the time of operation patient was in good condition, no evidence of shock other than subnormal temperature. Patient was frightened. The abdominal wall was rigid, liver dulness normal. Under anesthetic the rigidity somewhat disappeared. Abdomen slightly distended.

An incision was made over the wound of entrance and carried into the middle line in the course of the bullet. Penetrating wound was found plugged with omental fat. The incision was enlarged to six inches in length. The intestines were eviscerated into hot towels. Four large perforations about three-eighths of an inch in diameter were found. The edges of the wounds were ragged with everted mucosa. But little extravasated fecal matter was seen. The bowel was full of clotted blood. The perforations were closed with fine silk pursestring sutures, first through the mucosa and again through the peritoneal coat including the muscularis. The entire bowel was then carefully examined for other perforations but without finding any. The peritoneal cavity was flushed with warm 6 percent salt solution. Dry sponging of the cavity was then practised. The peritoneum was closed with continuous catgut sutures, as was also the muscular aponeurosis, and the skin suture was done with silkwormgut. The patient made an uneventful recovery and left the hospital well at the end of the sixth week.

CASE V.—E. N., aged 35, male, colored, occupation laborer. Entered the Cincinnati Hospital in the service of Dr. J. C. Oliver with gunshot wound of the abdomen, incurred during a friendly game of craps. Condition on admission: Well developed negro. Temperature 98°, pulse 104, respirations, 36. Shock moderate. Considerable pain in the abdomen. No external hemorrhage. Bullet wound of entrance in left anterior axillary line over the tenth rib. Exploration of the course of the bullet, after thoroughly cleansing the skin showed a downward direction and toward the median line. Penetration of abdominal cavity evident.

Patient was prepared for immediate operation, which was done under nitrous oxid ether anesthesia. Exploration before operation in the line of the bullet revealed wound of penetration. Abdomen opened in middle line. Incision carried from just below xiphoid appendix below umbilicus.

On opening the peritoneum dark clotted blood poured out in a great quantity. Rapid sponging of the abdominal cavity was followed by turning the intestines out *en masse* into hot towels. Search was at once made for the source of bleeding which was found to come from the large superior mesenteric branch included in leaflets of the root of the mesentery. Having apparently stopped the source of hemorrhage by transfixation of the mesentery including the bleeding vessel, attention was turned to the bowels. Six wounds of entrance and exit were discovered, which were quickly closed by pursestring sutures of fine black silk, the peritoneal coat being reinforced by one or two interrupted sutures. There being evidence of more deepseated bleeding, the mesentery was carefully examined and three perforations through its folds were found and sutured, thereby stopping the hemorrhage again. The bowels were then reexamined throughout for further perforations. None being found, it became once more necessary to search the abdominal cavity for sources of continued bleeding. It being impossible to stop the bleeding by ligature, and the patient's condition having become very threatening, a hemostat was left clamped at the root of the mesentery, the intestines after light sponging were returned into the abdomen, and gauze drainage down to the site of bleeding was introduced. The abdomen was closed in three tiers of sutures, and the patient returned to the ward.

The patient did not do well, and on the third day, there having been fresh hemorrhage, he was taken to the amphitheater, the abdomen again opened and found full of fresh blood. No time could be lost in vain attempts to ligate the bleeding vessels, and fresh clamps having been applied, after clots had been removed and abdomen sponged out, the abdomen was again closed and the patient removed to the ward where he died nine hours later.

Case VI.—E. B., aged 39, male, colored, occupation, laborer. Entered Cincinnati Hospital in the service of Dr. J. C. Oliver, September 16, 1905, for multiple gunshot wounds. Condition on entrance: Well developed and nourished adult negro, fully conscious and rational. On posterior surface of right shoulder one gunshot wound about one-fourth of an inch in diameter. On right side of chest about the level of third rib midway between mammary and anterior axillary line another bullet wound. On the right side of sternum about one-half inch from the edge of the sternum at the level of the fifth rib another wound, and on the right side in mammary line at the level of the ninth costal cartilage is still a fourth bullet wound; probe passes downward and inward two inches.

As we are concerned only with the two lower wounds, I will limit the report to these.

An incision was made over the wound penetrating at the fifth cartilage. There was found to be free hemorrhage coming from a penetrating chest wound. The hemorrhage was probably from a branch of the internal mammary. The entrance wound having been enlarged and it having been found impracticable to ligate the bleeding vessel a hemostat was left clamped in situ. The fourth having entered in the neighborhood of the liver it was deemed advisable to explore it. A free incision was made downward and inward following the track of the ball. The interlacing aponeurotic fibers of the external oblique and rectus muscles formed a firm basket-work frame in which there was no evidence of a bullet having entered. Confident however, that the ball must have entered at this place, I divided the aponeurosis freely, opening up the muscular parietes down to the peritoneum. The ball was found lying on the peritoneum but had not penetrated, illustrating the value of following up the track of the ball. The linear wound was closed with small cigaret drain in the path of the bullet. There was some suppuration from the wound to the right of the sternum, and some shreds of cloth were expelled. The patient recovered promptly and left the hospital well on the twenty-third day.

Case VII.—G. A., aged 34, male, Italian, occupation, laborer. Entered the service of Dr. N. P. Dandridge, September 11, 1904. Condition on entrance: Great shock, shallow sighing respiration. Temperature subnormal. Stab wound in right side of abdomen inflicted with stiletto. Operation immediate.

Believing that the hemorrhage came from the iliac vessels, the incision was made at the site of wound. On opening the belly an enormous retroperitoneal hematoma was discovered. The peritoneum was quickly opened, turning out great masses of partially coagulated blood. Most of the bleeding was from the common iliac vein which was promptly ligated. There was also a small wound in the wall of the right common iliac artery which was closed by suture. Four perforations were found in the small bowel but there was only time to close two of them. The patient died on the table from hemorrhage. Autopsy revealed a wound in the ascending vena cava as well.

Case VIII.—E. R., aged 19, white male, occupation, teamster. Entered Cincinnati Hospital in the service of Dr. J. C. Oliver, August 1, 1905, with penetrating stab wounds of the abdomen. Condition on admission: Well developed and nourished young male adult, suffering slight shock, and very restless.

On examination a clear-cut incised wound was discovered about three inches long, transverse to the long axis of the body and situated just below the xiphoid cartilage, extending clear across the interval of the substernal angle. The recti muscles were cut and their cut edges protruded through the wound. Hemorrhage was free. The cut extended down to and through the peritoneum. The gastrocolic omentum bulged into the wound. The examining finger readily entered the peritoneal cavity.

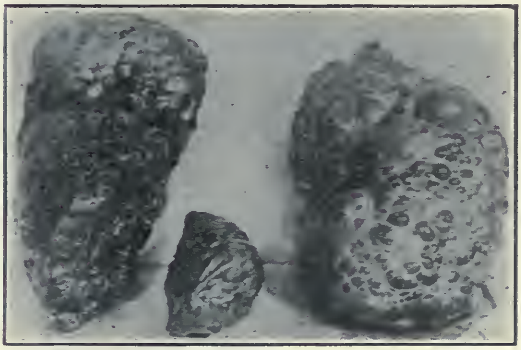
On the left side about one inch above the crest of the ilium in the anterior axillary line was another cut which bled freely and into which a probe could be entered fully three inches, and moved about freely.

The patient was prepared for operation which I did within an hour of his entering the house. The incision was made in the median line, connecting with the transverse incision, and carried down to the umbilicus.

The liver and stomach were untouched. The costal cartilage of the seventh rib was cut nearly in two and there was bleeding from an intercostal artery; this was secured and tied. The hand was then passed into the abdominal cavity to the inner wall on the left side and the intestinal loops lying in the neighborhood were first drawn out and inspected. No injury to the bowel was found. A careful examination, with the finger, of the parietal peritoneum, aided by a probe introduced from the wound and by reflected light, failed to discover any rent in the peritoneum. To make assurance doubly sure the intestines were carefully passed through the gloved fingers from end to end but no perforations were found. Free blood in the pelvis was carefully sponged out with gauze on a stick, the intestines returned, and the abdominal wound closed except where a small drain of gauze was laid over the liver on the original transverse incision. The other wound was drained by a small iodoform gauze wick. The patient made a prompt recovery and was discharged well on the eighteenth day.

Case IX.—J. B., aged 45, white male, occupation, laborer. Entered Cincinnati Hospital in the service of Dr. J. C. Oliver, with penetrating stab wound of the abdomen and stab of arm near shoulder. Condition on admission: Presents at anterior border of quadratus muscle, midway between costal border and crest of ilium, a stab wound one-half inch in length, passing directly inward and entering the abdomen. Patient suffers no shock. Pulse, respiration, and temperature normal.

Operation undertaken promptly. Belly opened in median line, bowels drawn out and carefully examined. No perforation was found but the mesentery was bloodstained throughout. No bleeding vessels noted. Hemorrhage probably from the wound in the abdomen. The abdomen was mopped dry and closed. A small gauze wick was left in the stab wound. The patient made a prompt recovery and was discharged well on the twenty-third day.



Ruptured Kidney, removed at Autopsy.

I append this report of a case of traumatic rupture of the kidney, as I think it is rather unique in that the ruptured kidney was one of two congenital cystic kidneys, the photograph of which is here presented.

Case.—A. P., aged 48, Italian, occupation laborer. Entered the Cincinnati Hospital July 26, 1905, in the service of Dr. Dandridge. For some reason he was admitted to F ward, devoted to criminals and drunkards. He was attended by the house surgeon until the third day when he was transferred to the regular male surgical ward and I was asked to see him.

History: On the afternoon of July 26, while working on a railroad, a tie thrown from a flat car bounced and struck him in the right loin. On admission, the history reads, he was suffering greatly, face drawn, abdomen distended, much pain in lumbar region. Increased dulness in lumbar region, but no tumor formation. Bowels confined. Urine drawn was very red, 1,010, alkaline, albumin, but no casts, numerous blood cells. He was removed to F surgical ward on July 29, and I saw him on my regular morning round July 30. A distinct tumor was discernible in the right loin which I diagnosed as a retroperitoneal hematoma due to ruptured kidney. The patient was immediately prepared for operation. The kidney, exposed through the loin incision, was found in a half gallon of blood clots and urine. No pulsation could be felt of the renal artery although the ureter was untorn. A large cystic kidney weighing 915 gm. was found broken in two pieces, having been torn down into the hilum. Hemorrhage was controlled by a hemostat introduced deep into the wound to the proximal end of the torn artery. The patient died ten hours later. I ordered an autopsy, predicting that the other kidney would be found similarly enlarged and cystic. The other kidney removed at the autopsy weighed 850 gm.

TWO CASES OF TROPICAL APHTHA (SPRUE).[1]

BY

H. F. HARRIS, M. D.,

of Atlanta, Ga.

Tropical aphtha, or sprue, is a disease which was first described by Hillary in 1776, his observation on this affection having been made in the Antilles. Since that time the malady has been recognized in most of the tropical countries of the world, and even in some subtropical regions. Although I have had no opportunity to examine thoroughly the literature of the subject, I am under the impression that the disease has not hitherto been recognized within the confines of the United States, and the fact therefore that it does originate and exist here is of much importance.

The two cases, the record of which follows, are I think, undoubted examples of this disease. The first case was observed somewhat over five years ago, but as the patient had previously to the beginning of the malady lived in the West Indies for two years, the question might well have arisen as to where the disease was contracted. For this reason I did not report the case at once, but have since that time kept constantly on the lookout for some patient suffering from this disease who had undoubtedly contracted it in the United States, and at last I have discovered a case which unquestionably originated in Georgia.

The records of these cases are as follows:

Case I: L. G. M., aged 32, white, male, native of Georgia, a dental student, was first seen on January 15, 1901. His family history is negative, except that one sister has had an exactly similar disease to the one the patient complained of; this sister has always lived in Boston, Ga.

Past History: During childhood, the patient had whoopingcough, measles, and mumps. Ten years ago he had chills and fever; he also had malaria seven years ago. He never had syphilis, but ten years ago he had a bad case of gonorrhea. He had typhoid fever ten or twelve years ago.

Habits: He uses tobacco; both smokes and chews. Before he was sick he drank moderately.

Present History: Present trouble was first noticed about six years ago while the patient was in his home, Boston, Ga., but previously he had spent two years in the West Indies. First symptoms noticed were that movements from the bowels were loose, but the number was not increased nor was blood or mucus present in the stools; no pain was present at this time.

More recently the trouble has slowly progressed, there being periods during which there were many loose stools passed in 24 hours while at other times the number was normal; often the stools were of natural appearance. As the trouble gradually grew worse some pain was felt before and during defecation, and there is more or less pain in the umbilical and hypogastric region at other times. He has had backache a good deal. Sometimes, perhaps once or twice a month or once in several months, there has been blood and occasionally mucus in the stools.

Toward the latter stages of the disease, the patient complained of great weakness, dizziness and staggering, and there was shortness of breath not increased by the recumbent posture or exertion. His feet are at times tender, but never swollen. His appetite is always good, but after eating he complains of a tight feeling in the abdomen. He gradually became greatly emaciated, and at this period was very melancholy. Toward the end his mind was greatly affected. With the progress of the malady the number of stools gradually increased.

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[1] Read before the Atlanta Pathological Society, March 23, 1906.

On first examination the patient was found to be in a fairly good condition, but was later greatly emaciated. The skin was never very pale, and in the later stages of the disease became of a muddy brownish hue. The pulse, temperature, and respirations were normal at first; later the pulse was rapid but no elevations in temperature were ever noted. His tongue is small, very red, fissured and generally without any coat at all; the filiform papillas seemed entirely absent. Later sores developed on and under the tongue—the borders being principally affected; these ulcers come and go. Ulcers also formed from time to time on the buccal mucous membrane, on the roof of the mouth, and between the last molar teeth on both lower and upper jaws—the last being known in India as Crombie's molar ulcers; these ulcers usually presented a reddish appearance, more rarely they are covered by a slight whitish pellicle. Toward the later stages of the malady the patient's mouth was so sore that mastication was difficult, and, doubtless as a result of sores in the pharynx and esophagus, swallowing was very painful.

The heart, lungs, and spleen appeared to be normal.

There was in the beginning slight diminution in liver dulness; in the later stage of the disease the dulness extended from between the seventh and eighth ribs above down to within about 4 cm. of the costal margin in the right nipple line. No other abnormality could be made out in the abdomen. Rectal examination showed no ulcerations of the mucosa of the gut.

The urine was examined a number of times, and, excepting only that the quantity was diminished, no abnormality was found.*

The feces were pale, frothy, and exceedingly offensive. Reaction acid.

No parasites, or ovums were found. Neither blood nor pus was ever detected.

Blood a short time before death showed 3,200,000 reds and 10,050 whites. Hemoglobin 65 percent. The patient gradually grew worse, and I learned that he died toward the end of the year 1904.

CASE II: J. C. G., aged 54, male, white, native of South Carolina, a woodman, was first seen May 20, 1905.

Family History: Negative.

Past History: Chills when a boy. Bowels had been loose from time to time for last twelve or fourteen years; when the trouble began he was living in Laurens county, Ga. For two years he has lived in Pretoria, Ga. For a long time in the beginning he was troubled with slight morning diarrhea at irregular intervals, accompanied by flatulence and eructations. Since October, 1904, his bowels have never been natural at any time.

Habits: Since attaining manhood has indulged in occasional sprees, but in the intervals takes no alcohol in any form. Uses tobacco.

Present History: For seven months he has had diarrhea constantly which has gradually grown worse. No griping or pain until a short time before death when he had pain in bowels during exacerbations. Toward the end of his illness the bowels acted from 15 to 20 times in 24 hours; movements came in paroxysms, possibly half dozen in an hour followed by periods of rest. In the later stage of the disease hiccough was common, there were spells of nausea and vomiting, the patient was melancholy, and toward the end his mind became very feeble.

The notes that follow apply to the patient's condition during the latter months of his life.

He was frightfully emaciated. Skin was somewhat pigmented, mucous membrane pale. The face was shrunken, and he had a vacant expression.

Tongue: Small and very red; filiform papillas absent. At this time, minute superficial erosions occurred upon its surface. No sores of buccal mucous membrane were complained of; no pain in throat on swallowing. The tongue was practically never coated, and when so there was only the merest trace toward the back.

Respirations: Normal when first seen; later toward termination reduced to 8–10 per minute.

Temperature: Practically normal. A few times during exacerbations has gone to 101° F. A short time before death it was 97.2° at 2 p. m.

Blood: Red cells 3,430,000; white 11,800; hemoglobin 75. Count of white cells resulted as follows:—Polymorphonuclear, .75; small lymphocytes, .18; large lymphocytes, .06; eosinophile .0⅔.

Feces: Foamy, thin, watery and brownish in color; sometimes clots of blood were present. Odor was very offensive. Food of all kinds now passed through undigested. Reaction acid. No amebas or other parasites. No ovums.

Urine was normal though quantity was diminished.

No tumor in abdomen. Tenderness was always present between the umbilicus and pubes. He complained of burning pain in this region extending to the back. In the right mammary line liver dulness begins at upper margin seventh rib and extends to upper margin of the ninth rib. Heart, lungs, and spleen normal. No pains in throat or neck. Rectal examination negative as regards ulceration, but considerable tenderness present.

The patient died March 2, 1906.

SOME OF THE LIMITATIONS TO THE ERADICATION OF TUBERCULOSIS.[1]

BY
CHARLES DENISON, A.M., M.D.,
of Denver, Colo.

There are enthusiasts in the present tuberculosis crusade, who feel so sanguine of the success of the movement, that they look for the total eradication of the disease from the human family. It is my intention to consider the improbabilities of such an outcome.

The principal governments of the world and many divisions or states thereof are represented by Congresses, Bureaus or Commissions, the object of which is the stamping-out of the great "white plague". It would seem that so much thought and energy centered upon this single purpose ought to result in success. This hope is reasonable, too, if one puts the disease tuberculosis on the same plane with other infections, the germ causes of which have been isolated and fully brought under control. But such reasoning is faulty, because the finer and more thorough the analysis is of the causes and effects of these separate diseases, the more it is evident that each is a law unto itself.

Especially is this true of tuberculosis, because unlike what is found in smallpox, scarlet fever, measles, etc., all healthy beings, because of their normal condition, possess a certain degree of immunity to infection by tubercle bacilli. Also in tuberculosis the nature of the infecting agency is different from that of other diseases, if as is claimed it is of a *mould* formation, presupposing a degeneration or decay as essential to its initiation. Some preparation, some acquired or inherent susceptibility, must precede this "pleomorphic mould" (which the tubercle bacillus is said to be by Prof. Hueppe[1] in his Principles of Bacteriology) before the germ can survive or perpetuate itself. While the germ is an apparent and perhaps an exciting cause of tuberculosis, it would seem to be an effect of other causes, the same as moulds elsewhere are. These causative conditions must be considered, whether prevention or treatment, eradication or checking of the process is the object sought.

I do not wish to be included with the pessimists among physicians, who seem to want to oppose the reasonable conclusion of others in order to advance some ideas of their own. I will not here try to explain the reasons for the widely opposing views held by some of the leading men in the medical profession upon the matter of treatment. Especially, I will only mention and pass by the hostile attitude of certain promoters of home-treatment methods, in eastern cities, on the subject of climatic treatment.

Yet, I would like to submit that the great disparity in the views now held by the medical profession—in many instances quite contradictory as to the prevention and treatment—should be conclusive evidence that we have not yet arrived at a full understanding of tuberculosis. Perhaps there is more yet to be learned than we know. There is, however, enough known to warrant a somewhat pessimistic view as to the probability, even passing by the possibility, of totally eradicating the disease.

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[1] Revised from paper written for the Central International Bureau for the Prevention of Consumption and published in "*Tuberculosis*." Read before the Medical Society of the City and County of Denver, February 6, 1906.

[1] Hoeppe says, page 42: "Upon the basis of further investigations which revealed branching even in the microbe of mammalian tuberculosis—investigations supplemented by my pupil Fischel—I have arrived at the definite opinion that the tubercle bacillus is the parasitic growth form of a pleomorphic mould and is not a true bacterium at all, but, in respect to its morphology, is closely related to the ray-fungus. Coppen Jones has subsequently confirmed these results . . . and very recently Hays Bruns and Semosen have confirmed the pleomorphism of the tubercle bacillus."

This inference as to the nature of the germ is reasonable notwithstanding the fact that this vegetable characteristic was proved under artificial conditions. It is, however, worth noticing that, like the ray-fungus, pleomorphism is said to be best produced when the access of air is prevented.

Considering the subject to hinge rightly upon the prevention of tuberculosis, it is of interest to observe, first, that even if a new and perfect cure were discovered, that fact, according to essential causative conditions before alluded to, would not insure the eradication of the disease. The cure is for the already infected; it does not reach the underlying cause, that is, the susceptibility or necessary degeneration, except incidentally to lessen somewhat the opportunity of contamination of the soil with this particular seed. The cure is all right and a natural result, if nature only has a fair chance to consummate it. But it is doubtful whether that word cure is the right one to apply to the arrested disease, except the term be qualified as relative. There may be a changed susceptibility left behind, and a somewhat increased liability to autoinfection, beside the resultant physical damage to the tissues. However, there is a certain adjustment to this tissue loss (with a complete and lasting arrest of all active symptoms) which now-a-days stands for a cure in both professional and lay estimation. Probably a larger proportion of people, who die of other causes than tuberculosis, have reached such a result or arrest at some period of their lives, than has been generally recognized. The postmortem records of skilled investigators bear out this statement.

When lately the wires flashed over the world, the statement from the discoverer of the successful diphtheria antitoxin that he had found a new cure for tuberculosis we were all filled with the hope that something entirely new in treatment was forthcoming. But when it turned out, from his published paper, that Prof. von Behring, in his preparation, was practically copying a form of tuberculin which had been successfully used in the United States for many years, not much more could be expected than has already been accomplished. That the utilization of the toxin in the bodies of the tubercle bacilli, freed from all protecting or combined substances would furnish the nearest to a specific for tuberculosis that we would ever find was predicted by me to Dr. Karl von Ruck of Asheville, N. C., before ever the latter decided upon his "watery extract of tubercle bacilli"; and the credit of the suggestion then made that a clear, standardized, pure extract be substituted for Koch's emulsion "T. R." has been generously accorded me by Dr. von Ruck himself in letters since received.

So the credit of this discovery seems to be due to Dr. von Ruck, rather than to Prof. von Behring, who now ungenerously assumes it all as his own. In proof of this I would respectfully refer to my own published articles[1] in which Dr. von Ruck's formula was given for this "extracting of the tubercle bacilli with water, ether and alcohol", then drying, pulverizing and redissolving; in fact, all the essential points in von Behring's present claim.

Not only are there many physicians in the United States who have long made use of this therapeutic measure, but it is more and more coming to be recognized that it is possible to stimulate a healing process in tuberculosis by the proper use of the pure toxin obtained from the germ. It seems to me that a different explanation is needed than that given by others, of the *modus operandi* of this effect; that is, this new method of treatment, in order to understand properly the limitations of this socalled cure. Even if this explanation of mine is admitted not to be free from conjecture, the conclusion is reasonable that the toxin in the germs cannot be appreciated by the harboring human system, as is the case with most of the poisons of disease. We should keep in mind the defensive war which is waged by the leukocytes against the toxic invaders of the system. The purpose of the leukocytes is to arrest and wall in the germs or to carry them to glandular structures where they are buried in new-growth. This is to be looked upon as a concealing of the essence of the disease in the body which has to harbor it. "In general the defense offered by the bacillus is so powerful that only a relatively small degree of immunity is developed by the host." Wm. Bullock, M. D., London *Lancet*, December 2, 1905.

The germs themselves contain their toxin within an envelope of fat and cellulose and this poison continues practically unrecognized by the organism, until some extreme degeneration or some chemical change is reached which sets that toxin free. If that recognition period is anticipated by the stimulation of repair in the affected organism's blood through minute doses of that same toxin, a direction is given for the healing cells of the body (leukocytosis) which may be termed specific because the new action is in the exact line of its need. Let it be understood that this stimulated leukocytosis is specific and then the difference between this effect and the leukocytosis caused by many chemicals and nucleins is understood.

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[1] The articles referred to were "The Antitoxin Treatment of Tuberculosis," *Journal A. M. A.*, Feb. 8, 1898, and "The Uses of Tuberculin," read before the Congress of Tuberculosis, London, July, 1901.

It is a natural process which is produced, and what cure is there which does not follow the laws of nature? But the resulting immunity can only be relative, for it depends (1) upon the receptivity of the subject affected; (2) upon a leukocytosis or healing power, which has its limitations; (3) upon an environment which may neutralize any result attained; (4) upon the amount of damage already done, or (5) upon a latency which the disease has already acquired.[1]

For the most successful use of this therapeutic measure in order to produce immunity to tuberculosis, there is only a limited time afforded during the progress of the disease. The failure to know these limitations of time and dosage and the shortcomings in diagnostic capabilities of physicians undoubtedly explain many of the failures in the use of tuberculin. On the one hand, the measure is usually not called for till natural resistance is failing, combined or not with latent tuberculosis. On the other hand the liberation of this and other toxins, which is ushered in with the period of "mixed infection" may set loose in the system an amount of poison not thrown off in expectoration or other discharge, which will complicate the curative process or wholly abort it.

As mixed infection, the almost universal accompaniment of breaking down of lung tissue, is such a critical complication of tuberculosis, it follows that there is as much need of discovering an antidote for it as for the tubercle bacillus itself. We need to know the character of the toxin—combined or single, chemical or whatever it is—which is generated by the union of the tubercle bacillus and the streptococcus, staphylococcus. etc., and then perhaps the proper remedy will be forthcoming. It is certainly reasonable to hope that this mixed infection limitation to successful treatment will be swept aside and that the arrest of the disease will be the rule in the future, still more than it has in the past.

It is for the experimenters of today to determine whether the remedy will be a new (antistreptococcic) animal serum; an unknown vegetable ferment as claimed in the Shiley socalled "combined" serum; the nucleins of Vaughn or Aulde; or a chemical antidote, like sodium cinnamate hypodermically administered. Perhaps hematologists may put us on the right track; for a minute understanding of the blood in such dyscrasic conditions would seem to be the best means of determining a proper remedy.

For the pure tuberculosis—the period before (and following) the most manifest mixed infection—my own experience for the past fifteen years tallies with that of Dr. Karl von Ruck, the late Dr. Whitaker, of Cincinnati, Dr. Taylor, of St. Paul and many other American physicians in favor of the specific effect of the better forms of tuberculin. I could point to some hundreds of instances among my own patients, in which the immunity thus produced has proved to be more lasting than had seemed possible under any other form of treatment. This immunity is the main element in the cure, if that term is used to express a complete arrest of tuberculosis.

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[1] While this explanation may not be technically scientific, yet it agrees with the most recent theory advanced, that of Dr. A. E. Wright in England, who, according to a letter just received from Johns Hopkins, has advanced the theory of "opsonius." He found that washed leukocytes do not take up bacteria, but if some serum be added to the mixture phagocytosis immediately occurs. He therefore concluded that there is some substance in the normal blood-serum which renders bacteria more easily ingested by leukocytes. This substance he called "*opsonin*." It is suggested that the immunity gained from tuberculosis is opsonic immunity. Dr. Wright has demonstrated that, even before the bacilli appears in the sputum, the opsonic power of the blood falls, and the addition of tuberculin raises it. The letter goes on to state—"They are figuring out a method here for easily determining the opsonic power of any serum—for clinical use. Dr. Wright claims that this determination should be used to regulate tuberculin dosage and avoid 'side-tracking the complement.'" Professor Wright, in the *London Lancet*, December 2, declares, in view of his successful results with the therapeutic inoculation of tuberculin, and in view of corresponding results with other bacterial vaccines used in other local infections, that "we have in the power of raising the antibacterial power of the blood, with respect to any invading microbe, out of all comparison, the most valuable asset in medicine."

So much for the cure; now for the prevention.[1] Lack of space compels me to summarize. The plan of prevention of tuberculosis by the regulation of expectoration in public places will occupy little space here because that means of escape is already so prominently advanced as the sole issue by the great majority of reformers as to hide from our recognition more obscure causes. The virtue of cleanliness is to be fostered and if the laws against the spitting nuisance in crowded thoroughfares, and in public halls and vehicles, will tend to drive people to live in the open in the country, they will accomplish great good.

While insufficiency of breathing space in sunless living and working rooms and in illy ventilated schools and sleeping apartments is, in my judgment, the chief factor in producing cases of tuberculosis, it is perhaps preferable to classify the main causes—the shortcomings of our present defective civilization—under separate headings, as I have done in a previous paper.[2]

We group the underlying causes as follows:

1. The advance of the healing art, insofar as the saving and prolongation of life is concerned, unfavorably influences natural selection, in that the weak are permitted to propagate their kind. The total of hereditary influences is thereby increased because more defective persons survive; the doubling of strains intensifies degeneration in the offspring. The transmission from parent or parents of susceptibility and of peculiarities of blood and vitiated vitality furnishes the required pabulum or soil for the growth of the tubercle microbe.

2. The present civilization stimulates the intellectual and nervous system to the injury of the physical (reproductive) powers and to the favoring of sterility. At the same time the demands of intellectual preferment and of social customs postpones the possibility, and so the probability, of healthful childbearing. The mastering incentive to excel, admittedly a source of improvement of the race, in refinement and power, is nevertheless the principal cause of the decadence of that race in physical well-being. The acquirement of wealth, fame, and higher education has outstripped the physical basis of life and the resulting weakened resistance to disease favors microbic infection.

3. The social, commercial, and manufacturing phases of our civilization favor indoor and inactive modes of life which are detrimental to successful physical development. The demands of labor, prolonging confinement in restricted quarters or cramped positions of the body; the limits to room space in buildings, whether due to the expense of more room or the cost of heating in cold weather; together with a prevailing ignorance of any law whatever of ventilation, are vitiating the blood of a large portion of the human race and producing susceptibility to tuberculous infection.

4. The independent self-supporting of women, chiefly in clerical positions, removes from the probability, if not the possibility of successful motherhood a great number of the fittest women for maternity. The resulting decrease in marriage and the exhaustion of the vital powers of women in nerve-taxing occupations largely affects the physically strong of the "gentler sex", while the weakly and matrimonially unfit are left to assume the responsibilities of future motherhood.

While these four conclusions only partially indicate those faults of our civilization which tend to degeneration and susceptibility to tuberculosis, they fully warrant our maintaining:

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[1] An essential attribute of prevention is that it must be continuous. I believe, as I some time ago stated, that were every tubercle bacillus in the whole world to be destroyed today, as by fire, in due time we would have tuberculosis nearly as rampant as ever, the conditions of life remaining the same as before such destruction.

[2] "The Degenerative Results of Defective Heredity."—Colorado State Medical Society, 1900.

1. That the general government or the proper influential investigating bodies should determine the unhealthful limits to air ventilation in living, sleeping, school and working rooms, in order that the per capita space necessary for health may be known as a basis of future legislation. There should be legal restrictions to the building of and to people living in rooms below the to-be-determined limit of unhealthful ventilation.

2. With reference to the improvement of the future progeny of the human race, competent education should be provided for the young on the laws of health; and before marriage on the healthful selection of mates, and the baneful results of bad heredity (such as the doubling of vitiated strains or propagation from actually diseased soil).

3. That the great need of education is among those chosen as legislators who are to frame the laws governing the hygiene of homes and of schools; the building of workshops, theaters and tenements; the safeguarding of the young and dependent in industrial works; or the limiting of childbearing to the healthy and fit.

In conclusion, while admitting a prolongation of average life during the last 30 years, and the lessening of the mortality from tuberculosis in proportion to other diseases. through the better understanding of tuberculosis (due largely to the present tuberculosis crusade); nevertheless it is evident, for prevention, a more fundamental fight must be waged than that merely against a germ infection. We must reach and attack the underlying causes of susceptibility to the disease. It is evident that the fundamental obstacle to even an approximate success in the eradication of tuberculosis lies in the constitution of our faulty civilization, so dwarfed by conventionality and perverted by artificiality, manifest in the lives and homes of the people, that a fruitful soil is provided for degenerative diseases. From such soil most naturally springs tuberculosis. The punishment of the race for its shortcomings is through this dyscrasic disease, and eradication is possible only through fundamental and radical reform.

ACUTE GLAUCOMA FOLLOWING THE INSTILLATION OF SEVERAL DROPS OF ADRENALIN IN A CATARACTOUS EYE.[1]

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The use of adrenalin in ophthalmic therapy is a subject worthy careful consideration. It has been used and misused for the last few years. Some ophthalmologists as well as general practitioners have employed this drug in strength varying from 1-1000 to 1-3000 solution, as a routine matter in nearly all the ocular diseases, sometimes with good, sometimes with bad results. The physiologic action of this therapeutic agent is so manifest, and its effect is so prompt that it is tempting indeed in all cases of ocular congestion. It is a powerful vasoconstrictor, blanching the conjunctiva so that very often the patient who comes with a deeply congested eye into the consulting room of the physician, has the extreme pleasure of going out with a congestion so much reduced as to simulate a normal appearance. It is a sudden transformation indeed, pleasing to the patient, and he is to attribute the miraculous local change to the wonderful knowledge of the ophthalmologist.

But adrenalin is not a harmless drug when considered carefully from the ophthalmologic standpoint, and in some cases its employment is followed by serious complications. It should be used—if used at all—with the utmost caution and when there is no contraindication.

Whenever it is used as a therapeutic agent in ophthalmic practice one should clearly bear in mind the pathologic condition of the eye, as well as the physiologic action of the drug, and be sure that the apparent beneficial effect resulting from the momentary local constricting action will not be followed by some grave accident. Many accidents have been reported in the literature by various observers attributable to the injudicious use of adrenalin. Thus Senn reports two cases of glaucoma in which the use of adrenalin was immediately followed by disastrous results; in both cases the pupil rapidly dilated and the tension became markedly increased.[1]

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[1] Read before the Eastern Medical Society, December, 1. 1905.

Accidents attributed to the indiscriminate use of adrenalin have been reported from time to time. Wessely, Takenofsky, Galesofsky noted extreme mydriasis following its use; Reynolds has warned against corneal opacities resulting from its employment. Bouchard reports a case of interstitial infiltration as a result of the use of adrenalin. To the already reported cases of accidents, I wish to place on record a case of acute glaucoma following the instillation of several drops of adrenalin in a cataractous eye.

Mrs. H. Y., aged 50, rather ill-nourished and very nervous, consulted me September 8, on account of failing vision in the right eye. Light projection was good, there was no sign of any inflammatory condition. Pupil reacted to light but was slightly larger than in the left eye. The left eye was normal, vision=6-9. I advised noninterference and asked her to see me again in about three months. Evidently not satisfied with my policy of noninterference, she consulted the following day, September 9, two ophthalmologists, one of whom instilled several drops. (I learned later from the physician that he instilled several drops of a solution of adrenalin.) Three hours after the instillation she began to feel severe pain in the eyeball radiating to the frontal and down the superior maxillary region, following the course of the first two branches of the trigeminus nerve. I saw the patient at her home about 12 hours after the instillation of the solution, and found her in agony. I was compelled to give her a hypodermic injection of 0.02 gm. (¼ gr.) of morphin. On examination I found the eyeball inflamed, marked ciliary injection, cornea hazy, pupil dilated, does not react to ordinary light, anterior chamber practically obliterated, eyeball very hard, tension +3. I advised iridectomy which was refused. I prescribed a 1 percent solution of eserin sulfate, one drop to be instilled every two hours and 0.65 gm. (10 gr.) doses of salicylates to be taken internally. This treatment was of no avail. September 11, the patient consented to an operation. I did an iridectomy and removed the cataractous lens, which, by the way, was forced out by the intraocular pressure as soon as the corneal incision was completed. Recovery was uneventful. Vision with a lens +900 Sph.=6-21. There is not a shadow of doubt in my mind that the instillation of adrenalin was responsible for the accident as I had seen the patient 24 hours before the drug was instilled. Nor did the two ophthalmologists suspect any glaucoma, as they advised her to return in six weeks for a cataract operation. But is this purely accidental?

Considering the physiologic action of adrenalin we find it to be the most powerful vasoconstrictor; it contracts the lumen of the superficial bloodvessels, the blood being driven into the deeper vessels, raising the blood pressure and giving rise to congestion. Its positive effect is as an energetic hemostat, causing local ischemia in the superficial vessels with a simultaneous hyperemia in the deeper vessels. The effect is however temporary, lasting about one hour, when the vessels dilate and the congestion returns to its previous state and often becomes more marked.

In some cases the use of adrenalin is followed by edema of the lid. Dr. S. A. Lovenberg, who used it in conjunctival injections, tells me that in two cases he observed extensive edema of the lids following its use. As a result of the physiologic action of adrenalin in causing a local ischemia by forcing the drug into the deep ciliary vessels, the ciliary veins become congested and cannot cope with the increase of blood, venous stasis results. The iris swells up and the ciliary body becomes congested, and in proportion as the iris and the ciliary body swell and get larger, the filtration angle is becoming smaller. In elderly people then, when the lens is large, when the sclera has already lost its elasticity, any sudden increase of blood in the deep ciliary vessels causes a congestion and a simultaneous increase in the secretion of the ocular fluid, and the relation between the outflow and the inflow of the ocular fluid is disturbed. The venous stasis may stimulate the dilator fibers of the iris, mydriasis follows and precipitates, in an eye already predisposed, an acute attack of glaucoma.

Adrenalin as a therapeutic agent in ophthalmic practice has been overestimated by its advocates. Grandclemant, for instance, advocates adrenalin in the treatment of glaucoma, especially in the early stage, in the prodromal stage, when no organic changes in the iris have taken place, and even then he says that it must be combined with eserin. According to his idea, adrenalin limits the hyperemia of the aqueous humor, while eserin aids in the exit of the aqueous through the filtration angle by opening the space of Fontana.

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[1] Wochenschrift für therapic und hygiene des Auges. 1905.

It is evident from the advice of Grandclemant, who advocates the use of adrenalin in combination with eserin, that the favorable result obtained must be attributable to the myotic action of eserin, despite the obstructive action of adrenalin.

The danger of its use in cataractous eyes is obvious. All cataractous eyes are predisposed to glaucoma. As a rule cataracts develop in old age and the lenticular sclerosis is sufficient evidence of faulty metabolic changes in the eye, interfering with its normal nutrition, and which likewise diminish the elasticity of the sclera, making it hard and unyielding to increased fluid. The changes also affect the vascular system as well as the lymphatic, making the current slower and sluggish and any sudden change in vascular pressure is apt to cause venous engorgement, venous stasis, swelling of the iris and ciliary body, and obstruct the filtration angle. The space of Fontana not able to cope with the increase of fluid, intraocular pressure consequently increases.

Adrenalin is just the drug ready to produce this condition in the already predisposed cataractous eyes. By its hemostatic and vasoconstricting action, it powerfully contracts the superficial vessels, blanching the conjunctiva. The compressed bloodvessel contents are forced from the superficial ciliary vessels through their anastomatic loops into the deep ciliary vessels, and there raise the blood pressure. But the veins cannot remove this sudden increase of blood, venous stasis results, followed by obstruction of the filtration angle, causing an acute attack of glaucoma. This then is no accident but the direct rational result of the physiologic principle of adrenalin. Of course, eserni also causes hyperemia of the iris, but its myotic effect provides for a dilation of the filtration angle so as to facilitate the outflow of fluid, and keep in balance the normal relation between the inflow and outflow, a physiologic principle adrenalin does not possess.

The therapeutic value of adrenalin, if it possesses any at all in ophthalmic therapy, must be limited to superficial conjunctival injections and should be employed only in the young and when there is no deep-rooted inflammatory condition to contraindicate its use.

In all deeply seated inflammatory conditions, such as iritis, cyclitis, choroiditis, etc., adrenalin is contraindicated. And even in superficial inflammation, such as keratitis ulcers of the cornea, adrenalin is positively contraindicated, as it contracts the superficial vessels, shutting off their blood supply, and reduces the nourishment of the cornea. The latter may disintegrate, and beside it may cause by its action a complication of the iris.

Its value even in conjunctival injections is not very great. As Ball[1] says, "its effect is only temporary, and the inflammation returns with force equal to or greater than before.

After a fair consideration of the subject, the following conclusions may be reached:

1. Adrenalin has a very limited field of usefulness in ophthalmic therapeutics.

2. It should be used, if used at all, in superficial inflammation of the conjunctiva.

3. Corneal and deepseated inflammations are contraindications to its use.

4. It is not a harmless agent, but it may, under certain circumstances, give rise to serious conditions.

5. It should not be employed in elderly people even in superficial inflammation.

6. It should never be used in cataractous eyes as it may precipitate an acute attack of glaucoma.

7. It should not be used in glaucoma in combination with eserin for its obstructive action retards the myotic principle of the eserin.

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[1] Modern Ophthalmology, p. 255.

THE EFFICIENCY OF COPPER FOIL IN DESTROYING CERTAIN BACTERIA IN WATER.[1]

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In February, 1905, Kraemer[1] published an account of the action of copper foil upon the colon and typhoid bacilli in water. His conclusions were most striking. In all his flasks containing copper, living bacteria disappeared after 4 hours, while in the controls, the organisms were viable even after 53 and 60 days. Such results called for a review of the work, inasmuch as there were divergent views upon the subject, and the plan was to follow out Kraemer's technic. A few additional experiments have been supplied, however.

TYPHOID BACILLI.

	NO COPPER.			COPPER.		
	Distilled H_2O	Lake H_2O	Filtered Lake H_2O	Distilled H_2O	Lake H_2O	Filtered Lake H_2O
Beginning.	1200	2000	1500	2000	1500	1200
After 4 hours	1200	1800	1800	7	120	120
After 9 hours	1800	2000	1500	0	0	2
After 24 hours	300	300	1800	0	0	0
After 2 days. . . , ...	400	500	9000	0	0	0
After 7 days.	0	30	7200	0	0	0

COLON BACILLI.

	NO COPPER.			COPPER.		
	Distilled H_2O	Lake H_2O	Filtered Lake H_2O	Distilled H_2O	Lake H_2O	Filtered Lake H_2O
Beginning	2000	2500	2700	2400	3600	2500
After 4 hours	1800	6300	3000	0	3600	2400
After 9 hours	1800	6000	14,000	1	3600	3000
After 24 hours	300	too thick	too thick	0	6300	2700
After 2 days.	0	do	do	0	18,000	6000
After 7 days.	0	do	do	0	2400	6000

Considerable work has been done on this problem. In 1904, Moore and Kellerman[2] announced their successes in destroying algæ by very weak copper sulfate solutions. This chemical was also shown to be germicidal to the typhoid and cholera organisms in a few hours. In December, 1904, Kraemer[3] wrote upon the subject giving practically what is contained in his later paper mentioned above. In Bulletin 76, Bureau of Plant Industry, Moore and Kellerman have summarized the work to that date, and additional evidence is adduced to support their former contentions.

Perhaps the best groups of experiments upon this question were published in May, 1905, by Pennington, by Gildersleeve, and by Stewart, just as our own work had been completed. Pennington[4] obtained colloidal copper by passing a current through water, using copper poles. A great deal of the metal was given up to the water, evidenced by the difference in the weight of the poles before and after the current had passed. The experiment showed a complete destruction of typhoid bacilli in 45 minutes. The trial with colon bacilli carried on at the same time showed a great reduction in the number of bacteria after the same interval, but no complete destruction. This worker also tried to get a condition to approximate the intake of a large water-supply, and obtained positive and suggestive results. Gildersleeve[5] determined the efficiency of the sulfate, chlorid, acetate, and the nitrate of copper solutions varying from 1–250,000 to 1–2,000,000. One to a million was found a safe limit, killing typhoid and colon bacilli in two to three hours, the colon bacilli proving the more resistant. Experiments were carried out with other organisms. Gildersleeve also ascertained the action of copper foil upon bacteria in water at room temperature. If the copper was put into the water directly after inoculating, there was always a reduction of the number of bacteria, but in no instance was this over 50 percent. in 8 hours; but if the copper was allowed to stand for 10 days in the flask and then inoculated, the colon and typhoid bacilli were not living after five hours. When copper vessels were used, giving a greater surface of metal, the germicidal action was more marked. Stewart worked with only the typhoid organism in sterile tap water, filtered water, and raw tap water. These were put into copper vessels and showed in all cases a complete absence of living bacteria after from 1–3 hours. Even when added to the waters of the Schuylkill and the Delaware rivers, the typhoid germs were destroyed after about two hours. The action on the water bacteria was not so marked.

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[1] Read in abstract at the Buffalo meeting of the American Chemical Society, June 23, 1905.

In my work the action of copper foil upon the typhoid, colon, and dysentery bacilli in water was studied. The copper salts were not used. Flasks containing 250 cc. of water of different character were inoculated from 24-hour bouillon cultures of these organisms. The water was previously sterilized in the autoclave, or in some cases bacteria-free water was obtained by filteration through a Pasteur filter and proved so by plating out. Sheets of dry, bright copper, sterilized in the autoclave and approximately 4 cm. square, were used for each 250 cc. of water, and each experiment was accompanied by controls. The water was plated out on plain agar at the beginning of experiments and approximately after 4 hours, 8 hours, 24 hours, 2 days, and 7 days, except in some of the last trials when no further plating was done after 8 hours. In one series, flasks were kept at incubator temperature and in another at room temperature. Bacteria were counted after six days' incubation. Stock laboratory cultures were used.

In no case was any copper reaction obtained from the water by testing with potassium ferrocyanid or with ammonia water, whether in flasks with bacteria or in extra controls with no bacteria. This is a significant fact in relation to the discussion of the possible toxicity of water so treated, a factor which Gildersleeve commented upon and concluded not to be a danger.

TYPHOID BACILLI.

	NO COPPER.		COPPER.	
	Distilled H_2O	Lake H_2O	Distilled H_2O	Lake H_2O
Beginning	360	300	360	480
After 4 hours	480	600	60	300
After 8 hours	480	400	0	40
After 24 hours	240	420	0	14
After 48 hours	180	1200	0	60

COLON BACILLI.

	NO COPPER.		COPPER.	
	Distilled H_2O	Lake H_2O	Distilled H_2O	Lake H_2O
Beginning	1200	4000	1600	4000
After 4 hours	120	4000	360	1500
After 8 hours	1	9000	2	360
After 24 hours	0	too thick	0	360
After 48 hours	0	do	0	360

Tables of some results are given. Typhoid and colon bacilli were used, and the flasks were kept at incubator temperature. Each table as given represents one of several trials with similar results.

In no case was there a total destruction of the colon bacilli by this method, except when using distilled water, and even the controls here show a great reduction. In every case, however, the colon bacilli when acted upon by the copper were far fewer than in the controls. The action upon typhoid on the other hand is most striking, all of them except in one instance being destroyed in 8–9 hours. Water that had been filtered through a Berkefeld hydrant filter and sterilized subsequently in the autoclave gave results similar to those from distilled water, the bacteria from the controls growing much fewer to total absence.

A series of flasks were inoculated in a similar way to the one above, but were kept at room temperature instead of that of the incubator to approximate more closely the conditions that would obtain if a householder were to use the method for purifying water. The results obtained here coincide somewhat with Gildersleeve's.

TYPHOID BACILLI.

	INCUBATOR.		ROOM TEMPERATURE.	
	No Copper.	Copper.	No Copper.	Copper.
Beginning.	12,000	14,000	10,000	10,000
After 8 hours	10,000	4	10,000	4000

COLON BACILLI.

	INCUBATOR.		ROOM TEMPERATURE.	
	No Copper.	Copper.	No Copper.	Copper.
Beginning.	12,000	10,000	12,000	16,000
After 8 hours	20,000	630	18,000	10,000

DYSENTERY BACILLI.

	INCUBATOR.		ROOM TEMPERATURE.	
	No Copper.	Copper.	No Copper.	Copper.
Beginning.	2300	2300	4000	4600
After 8 hours	8000	0	4000	0

The deduction from this series is that while typhoid bacilli disappear rather rapidly and completely when flasks are kept at incubator temperature, they are not so sure to die at room temperature unless the water is distilled. Therefore this method of destroying typhoid bacilli cannot be used by the householder with any degree of safety. It has been shown, however, that if copper vessels are used instead of flasks with immersed copper the method is safe.

In a last series flasks were kept both at incubator and at room temperature, and some of the flasks were inoculated with *Bacillus dysenteriæ*, (Fexner,) sterilized lake water being used.

In this experiment we have the same general conclusions as before. The surprising thing is the ease with which the dysentery bacillus disappears. This latter result is not quite in accordance with other workers', for instance, Gildersleeve's.

LITERATURE.

[1] *American Medicine*, February 18, 1905, p. 275.
[2] Bureau of Plant Industry, Bulletin 64.
[3] American Journal of Pharmacy, December, 1904, p. 574.
[4] American Journal of the Medical Sciences, May, 1905, p. 751.
[5] American Journal of the Medical Sciences, May, 1905, p. 754.
[6] American Journal of the Medical Sciences, May, 1905, p. 760.

Smallpox.—President Darlington, of the New York Health Department, having received word from the secretary of the State Health Department that over 40 cases of smallpox of a mild type had recently occurred at Catskill-on-the Hudson, urges that all persons who intend going into that region for their summer vacation should be vaccinated.

OTITIS MEDIA AS A COMPLICATION OR SEQUEL OF SCARLATINA.[1]

BY
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of Philadelphia, Pa.

Otitis media, as a complication or sequel of scarlet fever, is of quite frequent occurrence, The consequences are most disastrous, especially when the ear condition is neglected, and even in some cases when it is actively treated from the first, the infection is of such a nature that the condition will go on from bad to worse notwithstanding the most careful and painstaking treatment. It is a complication which is extremely likely to do permanent damage to the organ of hearing, which in a large number of instances incapacitates or handicaps the individual in after life. It is on this account that the otitis media of scarlet fever is feared quite as much as the disease itself. Of all the complications of scarlet fever it constitutes the one most to be feared, and the one that requires the most careful attention and treatment. It is the complication which is most likely, if neglected, to persist and give trouble in the future. In many cases the otitis does persist and gives annoyance and trouble to the patient long after the attack of scarlet fever has passed and been forgotten.

Scarlet fever is usually a disease of early childhood, and on that account, when it is complicated with severe ear trouble, is a frequent cause of deaf mutism. As a cause of permanent deafness, and deaf mutism, probably no disease of childhood compares in importance with scarlet fever.

May of New York, has collected statistics of 5,613 deaf mutes of whom 572—10 percent owed their condition to an otitis following scarlet fever. Besides this there are a large number of cases of chronic suppurative otitis media which persist throughout adult life, subject to more or less severe exacerbations and remissions due to sudden climatic changes and colds, which are a constant menace to the patient, on account of the liability of mastoid disease, and which can be directly traced to an attack of scarlet fever in childhood. The occurrence of otitis varies greatly with the epidemic, and also with the severity of the throat symptoms.

In the Metropolitan Asylum Board Reports for 1902 and 1903 there were reported 25,882 cases of scarlet fever in 3,833 of which the patients developed otitis, a percentage of 14.80 percent. There were also 192 cases of mastoid abscess in this number making a percentage of 0.74 of 1 percent. Of 4397 cases of scarlet fever reported by Finlayson, otitis developed in 10 percent, and of 1008 cases reported by Caiger, it occurred in 13 peacent, while in Burkhardt's statistics the percentage was as high as 33. It will thus be seen that there is quite a difference in the figures of various observers, which is probably due to the difference in the season of the year in which the cases were observed; to the difference in the severity of the epidemic, and to the difference in the severity of the throat symptoms.

The occurrence of otitis seems to bear some relation to the season of the year in which the epidemic occurs, as it is more prevalent following epidemics which occur in the winter than in the summer; thus Holt reports an epidemic of scarlet fever occurring in the New York Infant Asylum in the spring and summer of 1889 in which there were 73 cases of the disease, and not one case of otitis, while in a fall and winter epidemic in the same institution two years later, of 43 cases, 20 percent had otitis.

There is no regularity in the onset of this complication, as an otitis may occur at any stage of the scarlatinal attack. In some of the more severe cases of the disease, the otitis may come on during the first few days during the eruptive stage, but it usually comes on after desquamation has ceased, or in some cases it is delayed until convalescence is established.

In the more severe forms of the disease and in those attended with severe throat manifestations, the otitis comes on during the eruptive stage of the disease, or sometimes during the the first week, and is usually attended with rapid breaking down of the drum head, which may become completely destroyed in three or four days. The ossicles become carious and necrosis and exfoliation occur. The discharge is fetid, and may find its way into the labyrinth, followed by destruction of the labyrinth, deafness, deaf mutism, or meningitis. These are examples of a very virulent infection. The seventh nerve may also become involved in the process through necrosis of its bony canal, with subsequent facial paralysis.

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[1] Read before the North Branch of the Philadelphia County Medical Society, October 17, 1905.

In some cases occurring in the third or fourth week of the disease, or during convalescence, the onset may be insidious, with perhaps slight pain and slight elevation of the temperature, followed by perforation of the drum and subsequent purulent discharge. The persistence of fever, after the child is apparently well should always lead to the suspicion of involvement of the ears, and a careful examination should be made to determine that fact. It is an affection of early childhood, and the liability to otitis decreases with each year of life. Thus in 2078 cases quoted by Albutt, otitis occurred in 18.5 percent before the fourth year; between the ages of 5 and 9 in 10.1 percent; between 10 and 14 years in 4.1 percent; between 15 and 19 years in 0.7 of 1 percent and in those cases occurring after 20.—2.5 percent.

One or both ears may be affected, usually in bad cases in both, although rupture of the drum usually takes place at different times.

Pathology.—The pathology of the otitis media occurring in scarlet fever does not differ materially from that occurring in any of the other infectious fevers, it being due in the majority, if not in all instances, to an infection usually from the throat or nasopharynx through the eustachian tube, and as mentioned before, it is usually proportionate to the severity of the throat symptoms. Although Richardson believes that in some cases it may be due to an infection directly by absorption through the lymphatic and vascular systems, entirely independent of the eustachian tubes. Inflammation of the middle ear may follow in any of the acute infectious diseases, and as a general rule the severity of the inflammation within the tympanum corresponds in degree to that of the exciting cause.

According to Dench, in the mild exanthemata, the affection of the middle ear is confined to the lower portion of the middle ear cavity, while in the more severe infectious diseases, of which scarlet fever is one, the otitis usually has its origin in the upper portion of the tympanic cavity, and constitutes in reality a cellulitis. This cellulitis follows the course of a cellulitis in any other part of the body, very quickly results in extensive tissue necrosis, the soft structures breaking down, and forming pus, and this process may also extend to the contiguous bony structures.

Inflammation of the upper portion of the tympanic cavity always constitutes a disease of considerable gravity, and one which demands prompt measures for its relief; while inflammation of the lower portion is comparatively simple if we confine it to this region. In order then that the connective tissue structures of the vault of the tympanic cavity be affected, it is necessary that the germ causing the infection should be of considerable virulence, as less active varieties of infectious germs are not sufficiently virulent to attack connective tissue structures. Accordingly then, as the general disease is mild or severe, we may predict with considerable certainty the degree of aural involvement.

Bacteriology.—The microorganisms concerned in the production of an otitis are usually the streptococcus, pneumococcus, or staphylococcus, either separately or together, and in cases associated with diphtheria the Klebs-Löffler bacillus may also be found. The most virulent cases are due to the pneumococcus and streptococcus.

The otitis may occur as a simple catarrhal inflammation, which quickly subsides, or as is more common, it may be in the form of an acute otitis media, with more or less profuse purulent discharge, which if not soon relieved by puncture of the drum, will relieve itself by spontaneous rupture of the drum membrane.

There is first a hyperemia of the tissues of the middle ear and drum membrane, the vessels become engorged with blood, followed by a transudation of fluid elements and migration of white blood cells; this is followed by local tissue necrosis and formation of pus behind the drum with consequent bulging.

Symptoms.—An otitis may be ushered in during the attack of scarlet fever or after convalescence has been established, at which time there will be sudden and high elevation of temperature, 103° or 104°, with increased pulserate, constitutional depression, impaired hearing, excruciating pain deep within the ear, and in some cases these may be convulsions. In very young children and in babies the first intimation of an otitis may be a discharging ear, the other symptoms having been overlooked or attributed to some other cause. Swelling of the glands immediately beneath the ear often occurs and pressure over the tragus and over the tip of the mastoid increases the pain.

Upon examination of the ear the canal is swollen, red and tender. The drumhead is intensely red, and the landmarks are all obliterated. If rupture of the drum has not occurred the drum will usually be found to be bulging, generally in the superior posterior quadrant. If rupture has already taken place, the canal will contain pus, and the sight of the perforation will sometimes be shown by a pulsating reflex. After the pus has been removed from the canal the sight of the perforation cannot as a rule be seen, but will be recognized by a pulsating droplet of pus, or by the constant escape of pus at one spot. After perforation has occurred, there is usually a cessation of all of the symptoms of fever, pain and general depression, and the child experiences considerable relief. In cases in which both ears are affected the same symptoms may develop in a day or two, due to infection of the opposite ear. In some cases the discharge will be only pus, while in others the pus will be mixed with blood, the admixture of blood indicating a high grade of inflammation.

Complications.—Cases have been reported by Baader, Hessler, Hynes, Huber, Kennedy, Moller and West in which there was severe and fatal hemorrhge from the ear following scarlet fever, due in Baader's case to erosion of the lateral sinus, and in the other cases reported to erosion of the internal carotid artery.

In cases which are followed by mastoid involvement these would be swelling, edema, pain and tenderness over the mastoid region, with swelling and bulging of the posterior wall of the aural canal, and all the train of symptoms which follows in the course of mastoid abscesses.

Prognosis.—This should always be more or less guarded, as there is considerable likelihood of impairment of hearing following this affection, and as we have already stated .74 percent of the cases develop mastoiditis. The prognosis is much better in those cases which are recognized and treated early. In neglected cases, especially when both ears are affected, and in very young children, about 10 percent will become deaf mutes. A very large number of the cases of chronic suppurating ears in after life owe their origin to an attack of scarlet fever in early childhood.

Treatment.—Resolves itself into the prophylactic and curative. A careful, systematic and routine examination of the ears should be made in all cases of scarlet fever, as by this method we would be able to detect the first signs of aural involvement. The throat and nose should also be carefully examined, and appropriate treatment instituted to keep them in an aseptic condition. In this connection I would strongly condemn the practice of irrigation of the nose, as has been advocated and practised by some.

A great deal of benefit will result by the use of mild antiseptic solutions used in the form of a gentle spray three or four times a day. By the use of irrigation we are apt to use too much force, or the pressure is likely to be too high, and septic matter from the throat will be forced through the eustachian tubes into the middle ear and set up the inflammation. In the same way septic matter may also be carried into the sinuses.

If, in spite of these precautionary measures, an inflammation does result, perforation should always be anticipated by a free incision of the drum membrane, and I would strongly advocate that the incision should be made early and free. It does no harm to make a free incision as it hastens the recovery and removes all danger. By waiting for spontaneous rupture more of the drum is sacrificed, and there is greater danger of intracranial infection taking place before rupture occurs. The incision should be made at the lowest point of the bulging drum and should be made large enough to drain freely. This may be done under local anesthesia, or in very young children a general anesthetic may be given. The operation, of course, must be done under the strictest antiseptic precautions. If done early, before the serous collection has become purulent, and we are careful with our antisepsis, we may in some cases prevent the formation of pus, and thus very materially hasten the recovery. This little operation will in almost all cases give instant relief from the pain. Local blood letting and warm instillations of boric solution with hot or cold applications externally will also be indicated in some cases. An acute otitis should never be allowed to become chronic, hence it should be watched carefully and daily examinations should be made until complete recovery ensues. Scrupulous asepsis should be observed during the treatment to prevent secondary infection. The throat nose and nasopharynx should be rendered as aseptic as possible to lessen the liability of reinfection. If the discharge should become purulent the canal should be kept clean, and the pus should be removed by gentle irrigations of warm boric solution or some mild antiseptic. In some instances we may swab the canal with hydrogen dioxid on a cotton wound-applicator, followed by the use of alcohol, and a very little antiseptic powder, such as boric acid, aristol, or should be insufflated into the canal, and the canal should be very lightly packed with antiseptic gauze carried down to the seat of the perforation in order to insure free drainage. This treatment should be repeated once or twice a day according to the amount of the discharge, until all suppuration has ceased.

If carefully carried out, under this plan of treatment, the perforation, in the majority of instances, will heal, especially in cases in which the drum has been incised early, and we will have a normal and useful ear as a result.

In conclusion, I wish to emphasize the importance of careful and systematic examination of the ears in all cases of scarlet fever; the importance of careful and painstaking treatment of the throat, nose and nasopharynx; the early and free incision of the drum without waiting for spontaneous, rupture and of careful and conscientious after treatment.

PNEUMONIA COMPLICATING PREGNANCY.[1]

BY

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of Ann Arbor, Mich.

Edward F. Wells recently published a paper entitled "Pneumonic Fever in Pregnant Females," in which he gives his experience with 456 cases. Of these, 11 occurred during pregnancy. Of the 11 cases 4 occurred when the women were between one and three months pregnant; 7 were between six and nine months. Of the first series of 4, none of the patients aborted and all recovered. Of the second series, labor was induced at the sixth month, in one case; in two, at eight months; and in one at term. This patient died, the other 10 recovered. All the children were born alive, but all save one died soon after delivery. In case xi, of Dr. Well's series the history is so striking that I will cite it here.

The patient, aged 31, when two months advanced in pregnancy, was taken ill with pneumonia on December 10, 1882. Profuse epistaxis occurred on the seventh day with rapidly following crisis and recovery. Thirteen months later when one month pregnant she had a second attack of pneumonia terminating in recovery.

On March 13, 1886, she had pneumonia for the third time, when nearing full term in her sixth pregnancy. Her condition was very serious. Temperature 104°. On the fourth night of illness Dr. Wells advised induction of labor which was refused by the patient. Her symptoms grew more serious the following day. On the sixth day Dr. Wells determined to induce labor at all hazards on account of the alarming dyspnea. The child lived and the mother improved for a time but was seized later with puerperal mania and died on the twelfth day of illness. (With our present knowledge we might infer that death was due to sepsis.)

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[1] Read before the Ann Arbor (Mich.) Medical Club.

Out of 2,475 women ill with pneumonia at the Vienna General Hospital only 43 were pregnant, or about 2 percent.

The following case occurred in the practice of Dr. Belser with Dr. Lynds as consultant:

During the latter part of the year 1903 a woman in Ann Arbor was suddenly taken ill with pneumonia. She was in the eighth month of pregnancy. Dyspnea and respiratory embarrassment became marked. Labor began on the evening of the third day of illness and the patient was delivered with forceps of a dead child as rapidly as possible. The mother died on the following day. Dr. Wells strongly advocates induction of labor in those cases in which dyspnea becomes a distressing symptom in pneumonia complicating pregnancy.

C. L. Morgan,[1] of Wichita, Kansas, reports the following case: A woman having measles, was delivered of a boy who was covered with the measles rash. The child recovered but the mother died of double pneumonia. (This may have been puerperal pneumonia, although from the reading I infer that the disease developed before delivery.) Deviliers,[2] who reports two cases, says pneumonia is one of the nonspecific forms of disease attended by fever which always has a special gravity when complicated by pregnancy. Through the labors of Sternberg, Weichselbaum, Frankel, Friedlander and others we have learned to look upon pneumonia as a specific disease. And we can go even further and say that pneumonia is a self-limited disease.

The occurrence of two cases of this complication at Ann Arbor within 2½ years gave rise to the thought that the statistics on the subject in this immediate vicinity might prove interesting. I, therefore, communicated with 20 of our most experienced physicians asking them for the number of such patients they had treated, the outcome of the disease, etc., I received a reply from nearly the whole number and all save two answered in the negative. Dr. Hull, of Ypsilanti, reports two cases, one recovery and one death. The patient who recovered was at the eighth month. In the fatal case the patient was very near full term. Both babies died soon after delivery. We have, therefore, a total of four cases for Washtenaw county, with a mortality of 50 percent and an infant mortality of 75 percent. I cannot but feel that the complication is more frequent than these figures would indicate, for the reason that physicians are so reticent when they approach a report of fatal issues. During the past 20 years the Michigan State Medical Society has made no mention of this subject, and possibly it has never been considered by our State association. In 23 volumes of the *New York Medical Journal* there is no literature on the subject and in the *Journal of the American Medical Association* it has not been mentioned since 1898 and there is but one reference to the subject in its index of current medical literature since that time.[1] These facts indicate that pneumonia in pregnant and puerperal women is rather an unusual occurrence. In my own practice I have had but one case and I disclaim any particular credit for its fortunate outcome, regarding it more as a piece of good luck for the patient than anything else. Pneumonia is more frequent during the nine months of pregnancy than in the two weeks of the puerperal state, for the obvious reason of the longer duration of the former than of the latter condition. But when the disease attacks the puerperal woman, the results are even more serious than when it occurs during pregnancy. I know of no disease at the present time that demands greater study and closer investigation than pneumonia; no disease that demands quicker, more positive, and direct action on the part of the physician. And I would emphasize this fact that when pneumonia attacks the pregnant woman, it may be even of greater importance to know what not to do, than to know what to do.

During the night of March 9, 1905, Mrs. P., aged 24, II-Para, 7½ months pregnant, was taken with a severe chill and vomiting. I first saw her on March 9, at 8 a. m. Rapidly developing pneumonia of the lower right lung was present. Her temperature was 102°, pulse 120, respirations 60, and she was in great pain.

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[1] Kansas City Medical Index, Dec. 1887.

[2] New Practical Dictionary of Medicine and Surgery.

[1] Vol. 33, p. 1087.

The fetus seemed quite active. At 5 p. m., temperature was 103°, pulse 130, respirations 60. March 10, at 8 a. m., temperature 101°, pulse 120, pain, fetus active; 5 p. m., temperature 103°, pulse 140, respirations 70. Base of the left lung was involved. March 11, 8 a. m., temperature 101°, pulse 120, respirations 50, pain marked; 5 p. m., temperature 102°, pulse 120, respirations 50, fetus active, sputum rusty. Patient's face was markedly flushed bordering on cyanosis. This condition continued for some days even after the temperature had returned to normal.

March 12, 8 a. m., temperature 98.5°, pulse 104, respirations 50; here is an erratic morning temperature. At 5 p. m., temperature 100°, pulse 120, respirations 50, middle and lower lobes of the right lung and lower left are consolidated. Sputum rusty.

March 13, 8 a. m., temperature 100°, pulse 120, respirations 50, fetus active; 5 p. m., temperature 101.5° where it remained for a period of 36 hours, pulse 130, respirations 50. On the morning of March 17, temperature reached normal. On March 19, the lung area was still consolidated, fetus active. No rusty sputum was noted after 48 hours from the time of its first appearance on the third day of illness. On April 15, I delivered the patient of a healthy five-pound male child. Her labor was rather rapid and the puerperal period in every way normal.

The patient's bowels were kept open during the whole course of the disease. I insisted on plenty of fresh air and plenty of cold milk and water to drink. I gave her rather liberal portions of paregoric as an anodyne. On the evening of the third day of her illness I began with 2 mg. (1-30 gr.) strychnin and .016 mg. (1-100 gr.) digitalin every two hours in addition to the other treatment. Strychnin and digitalin were reduced to four hour intervals on the morning of March 17. On March 20, digitalin was omitted. On March 22, I first detected the fetal heart sounds; the patient was then sitting up and convalescent.

It will be noticed that the temperature range in this patient was below that usually present in pneumonia, only during a period of 36 hours did the temperature reach 103°. A normal temperature on the fourth day of illness when all the pneumonic processes were at their height, is somewhat erratic, and probably due to an inhibition of the pneumonic toxins, the subsequent temperature rise indicating fresh liberation of poison.

Some interesting questions arise: Does the high maternal temperature of pneumonia destroy the life of the fetus, or does the toxin-vitiated blood make the mischief? What degree of abnormal temperature will the fetus tolerate? Gusserow by experiment found that a temperature of 108° was uniformly fatal to the fetus. In the case reported, did the fetus remain viable on account of the comparatively low maternal temperature? In a number of cases the fetus has survived a temperature of 104°. In regard to the treatment in general, shall we limit ourselves in pneumonia during pregnancy to the best possible medical and hygienic treatment, or shall we call the obstetrician to our aid and by rapid and forcible means, terminate the pregnancy in the hope of saving the mother? Surely every well meaning physician, after due deliberation and council, would not hesitate at the destruction of the fetus, if by so doing the life of the mother can be saved. But does this procedure during pneumonia, really save life?

Charpentier reports 43 cases of pneumonia during pregnancy. Of these 28 occurred before the one-hundred and eightieth day of pregnancy, of these, 23 patients recovered, 5 died. Of the 23 recoveries, 6 patients miscarried. Of the deaths all the patients miscarried. After the one-hundred and eightieth day of pregnancy 15 cases occurred. Of these 8 patients recovered, 7 died. In the 8 recoveries there were 5 premature labors, 3 went to term. In the 7 cases which terminated fatally there were 5 premature labors while 2 deaths occurred with the fetus in utero. These facts would seem to show that pneumonia is much more fatal after the seventh month of pregnancy, and may therefore serve as a key to our procedure in treatment. Matton says that of 18 cases in which pregnancy was interrupted, 9 women died, while in 20 women who suffered from pneumonia without aborting but one died. Tarnier justly remarks that in all probability in the series of 18 cases the pneumonia was more malignant than in the series of 20 cases and hence the greater mortality. Chatelain's statistics include 39 cases; in 10 abortion occurred; in 9 labor was induced. Of these 19 cases, 10 patients died and of the remaining 20 cases, 10 patients died, showing that little was gained by the interruption of pregnancy. Grisolle's reports give a mortality of 92.8 percent, Ricau 35.8 percent, Bourgeois 75 percent, Wernich 21.1 percent, and Chatelain 39 percent. Statistics from the obstetric wards of the Philadelphia Hospital show a mortality of 75 percent. The occurrence of pneumonia early in gestation probably explains the wide variation in these statistics.

Some authors maintain that abortion is followed by resolution of the pneumonia and they therefore advise the induction of labor. But on the other hand, it is very evident that pneumonia will resolve without such precedure. Some affirm that the enlarging gravid uterus impinges seriously upon the lung space and thus compromises respiratory movements. But this is amply compensated for, since Kuchenmeister and others long ago demonstrated conclusively that the pulmonary capacity is *not* lessened during pregnancy. "That if the thorax is not so deep, this diminution in depth is compensated for by the increase in breadth of the base of the chest, and that after delivery the chest resumes its usual shape." Wernich, Hegar, Martin, Gusserow, and other German authors are positively opposed to the induction of labor in these cases, because they, one and all, maintain that the sudden change of pressure within the thorax, from the rapid emptying of the uterus, invariably results in fatal pulmonary edema. Grandin and Garman voice the sentiment of the great majority of American authors when they say, "The position of the physician as regards pregnancy during pneumonia must be passive. It will avail nothing, either for the woman or the fetus, to induce abortion or premature labor." In conclusion, I would say that artificial interruption of pregnancy during pneumonia should not be altogether rejected, as after every other known method has been applied without avail, premature delivery may turn the tide of an otherwise fatal issue. The woman is certainly entitled to a last chance for her life. But in the great majority of cases results will be better if we limit ourselves to a a thorough, scientific, medical, as well as hygienic treatment.

I desire to acknowledge my indebtedness to Dr. Wm. F. Breakey for his aid in the search of the literature on this subject.

SPECIAL ARTICLES.

MUNICIPAL CONTROL OF TUBERCULOSIS.[1]

BY

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of Philadelphia.

We may assume, established beyond the possibility of dispute, that tuberculosis is both preventable and curable. The campaign against the disease must be an educational one, and I take it for granted that all American citizens are agreed that we cannot entertain any fear of carrying this or any other form of education too far. Last year the city of Philadelphia spent on its schools $4,453,755.55 and this year there is available $6,070,282.20 for the same purpose. No taxpayer whose heart is in the right place regrets the expenditure of a penny necessary for training the American youth and affording him that mental equipment necessary for him to take his proper position in this great republic of ours. None denies the necessity of mental training; how much more valuable then is the protection of the body, upon the integrity of which the operative capacity of the mind so largely depends. Every disease exerts some influence on mental activity—none more so than tuberculosis—and it is eminently proper that the thoughtful mind should direct its energy toward the limitation of the ravages wrought by the "great white plague". No other disease is so widespread; yellow fever casts its baneful shadows in the tropics, mosquito-borne malaria laps over from the tropical to the subtropical zone, typhoid is ever with us, but from pole to equator and through all degrees of longitude tuberculosis masses its legions irrespective of climate and in numbers greater than the graves at Gettysburg or the corpse-strewn plains of Manchuria. Surely no problem more deserves our enthusiastic attack and no contest which has occupied the energies of the race could demand a greater concentration of effort than this world problem with which we are today face to face—the control of tuberculosis.

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[1] Read before the Pennsylvania Society for the Prevention of Tuberculosis, in Philadelphia, January 31, 1906.

Surely a government that can spend millions on its navy, millions more on the equipment of its land forces, may well devote its energies to this all-important conflict. States and cities that spend millions on the insane and the criminal may well turn their attention to a problem, the solution of which promises more to the human race than the Magna Charta or the Declaration of Independence, the result of Waterloo or the fall of Port Arthur, the repeal of the Ripper Bill, or the solution of the difficult problem of the primary election.

Dr. Darlington has laid before you the results of a brilliant campaign conducted by our great sister city. You will agree that they have fought nobly and that, though victory has not yet perched upon their banners, they have stayed the sodden tread of this devastating angel, and taught civilization that no sincere effort is without its proper fruition. The problem is an enormous one, its ramifications permeate every nook of our social system; its branching lines extend like a web through and over every phase of modern civilization and a complete grasp of the subject must lie beyond the capacity of any single individual or a group of individuals, and can be approached only by the strength of a great and powerful municipality. I believe in the conservation of public health by the broad arm of wise and justly administered law, and the question that faces us from all sides today is how can this law, this weapon of inconceivable power be utilized for the amelioration of human suffering, the prolongation of life, and how may it be made to add to the sum total of human happiness. The protecting hand must add its shielding influence from the cradle to the grave, and the question is not so much how many things are to be done, but where shall we begin and which are practical and feasible, and may now be inaugurated. Upon some of these I wish to touch with the distinct preliminary statement that time is not available to catalog all the possible avenues by which the complex problem may be approached.

First with regard to our habitations. Building inspection should insure stability and proper hygienic supervision of designed equipment and construction, should afford a guarantee to every dweller that the house which he proposes to erect, purchase, or rent, and the store and workshop in which a livelihood is to be earned shall be so constructed as to offer no perils to his health and be free from those dangers the sum total of which goes far to determine the incidence of tuberculosis. Darkness, dampness, and dirt are the gardens in which the tubercle bacillus thrives; sunlight and cleanliness are its greatest enemies. Dust must be reduced to a minimum and particularly is this true with regard to certain occupations. Among the tradespeople, 17 per 10,000 living die of tuberculosis, while for an equal number of barbers 33 succumb, and for 10,000 bookkeepers 40, and for stone cutters 54. In 360,000 dark interior rooms 30,000 persons are tuberculous. Certainly these are arguments for the municipal supervision of house construction and the assertion of sanitary authority over the architecture of our homes and workshops. Medical man and layman are agreed that impure air, inadequate ventilation, and overcrowding are powerful aids in the perpetuation of this malady.

The Italian tax gatherer who sought revenue for the State by assessing windows, garnered into the coffers of his government a grim harvest of human lives. It is a sad comment on human avarice and ignorance when we consider that habitations and shops may be constructed with more thought to their earning capacity than their adaptability for the protection of those who come within their walls. While we, as sanitary authorities, carry on our crusade against the mosquito, let us not forget the inhuman vampire that lives on the blood of his fellowmen or looks with complacency on the crowded cemeteries which his avarice has peopled. Give the dwelling and the workshop pure air in abundance, flood it with nature's great germicide—light—and insure cleanliness. If sanitary supervision be necessary to accomplish these ends let properly constituted authorities wield impartially the omnipotent power of American law.

After a patient in the active stage of tuberculosis has removed from a habitation or has died therein, it is little short of a crime to permit anyone to occupy the vacated rooms prior to a thorough cleansing and complete disinfection. No one should be permitted to rent a house and no lease should be legal and binding unaccompanied by a certificate from the proper health authorities stating that the premises have been properly disinfected and are free from danger of tuberculosis. To secure data upon which this idea can be made operative the constituted health authorities must know the houses in which tuberculosis has occurred. The registration of tuberculosis is absolutely necessary in order that the municipality may make any concerted effort directed toward its control. When we possess records of the houses in which infection is known to have been present we may guard the public by proper disinfection and an improvement of manifestly prejudicial sanitary condition within such dwellings.

Of the streets and alleys of a great city there is nothing that I can say that would be new. Keep them clean, suppress dust, enforce the antispitting laws. Insist on the suppression of the unspeakable filthy, disgusting, and inexcusable habit of indiscriminate expectoration.

An unpopular law can be enforced only with great difficulty, and it, therefore, becomes the duty of every citizen to frown upon the prevailing tendency to indiscriminate spitting, not only in public places but also in private dwellings. We know that tuberculosis is largely disseminated by the sputum, that a single individual may produce daily sputum containing 7,200 millions bacilli and that it is largely through this agency that the disease is scattered. By concentrating our efforts upon this source of infection and by teaching the sufferer how he may dispose of this prolific source of infection with safety to himself and his fellowman, we shall accomplish much in the suppression of the disease.

The food supply to a great city is a problem of ever-increasing perplexity, and requiring constant municipal supervision. It is probable that the last word with regard to tuberculous meat and milk as causes of human tuberculosis has not been said, but nevertheless it is my opinion that sufficient evidence is before us to justify rigid supervision of the sources and methods of distribution of these items and particularly of milk. I doubt if a city in the union can question the advisability of proper control. Tuberculous workers in shops, breadwinners in stores, and even garment workers having tuberculosis are mild offences against the health of the community compared with the dangers resulting from tuberculous individuals handling and dispensing food. Certainly dealers in foods should not be individuals in a communicable stage of tuberculosis.

There is probably no more difficult aspect of the tuberculosis question than the employment, in certain occupations, of sufferers during the active stages of tuberculosis. During the cold period of last winter I saw a woman carrying a carefully folded and partially wrapped garment, enter a car bound for the central portion of the city. Her pale, wan, and haggard face, and hollow cough told a story requiring no expert to understand. She expectorated into a handkerchief which in the intervals between her coughs was carried in the folds of the garment laid carefully across her lap. Suspecting the nature of her mission I took occasion to follow her and saw her enter the emporium of one of Philadelphia's largest houses devoted especially to the manufacture of children's clothing. Here was a woman eking out a slender living by her needle and furnishing garments that of necessity must have been infected and the source of no little danger to the future wearer. Crowded sweatshops containing tuberculous workers are sources of danger to the uninfected inmates and the purchasers who handle their product. But with proper education, and intelligent effort on the part of the patient, the dangers from such individuals may be reduced to a negligible quantity.

Fortunately those vocations in which the greatest danger to the public lies, are those fraught with peril to the patient with tuberculosis. Outdoor occupations will save the lives of many of those sufferers and reduce to a minimum the dangers to the community. An exceedingly erroneous impression, at one time prevalent, but now no longer held was that the sufferer from tuberculosis should be immured, that he was dangerous in the sense that the smallpox or scarlet fever patient was dangerous, a thought so fully controverted that it needs but be mentioned to be condemned. There is this great difference between the two groups; the patient with an actively contagious disease has no control over its dissemination, while the intelligent tuberculosis patient can, by his habits, render his disease innocuous to those with whom he comes in contact.

Our schools may be used as weapons of incalculable value in this crusade against tuberculosis. The teachers employed should be individuals in whom no evidence of the malady in any active stage can be detected. Here, better than anywhere else, can a generation be taught the value of fresh air, proper exercise, wholesome food and the general methods by which the personal danger of the individual may be reduced to a minimum.

Why agitate overcrowding in the workshop and home, while packing growing children into indifferently heated, poorly ventilated, and badly lighted schoolrooms. Make every aspect of school life educational; teach by precept and example those fundamental facts upon which the prevention of tuberculosis and other communicable infectious diseases so largely depends. Advise parents that certain children possess physical attributes which render them particularly susceptible to this disease. Later, in the more advanced schools, teach those principles of personal hygiene calculated to strengthen the resistance of the individual, and guard those manifestly predisposed from callings especially likely to accentuate any inherent tendency to the affection. Here our medical inspectors may accomplish much. No city in the union is better equipped with a medical corps, by the enthusiastic efforts of which much may be done in preliminary instruction of the developing youth, and in guiding parents at a time when prevention will be of greatest value. Here I may venture the suggestion that parents often do wrong in not consulting the family physician concerning the avocations to be chosen for their children.

An important step in our crusade against tuberculosis is an intelligent municipal control of the conditions under which the wage-earner must find his employment. Romme has recently discussed this matter exhaustively. He speaks at length of the danger of unhealthful dwellings, shops, workshops, manufactories, and the industries to which I have already referred.

Long hours of exhausting labor are especially dangerous to susceptible individuals and the worse the sanitary conditions the greater the danger.

Insufficient income and its necessary results, crowding, unsanitary dwellings, indifferent food, and too often, alcoholism, are prolific predisposing factors in determining a final surrender to the invading germs of tuberculosis. Alcoholism and the factors with which it is inseparably associated are also worthy of public consideration, although probably not within the realm of practical municipal supervision.

In the asylums, hospitals, almshouses, and prisons under the control of a municipality we should insist upon the separation of the tuberculous inmates from those not so infected. The tuberculous insane should be kept separate from the uninfected, and the same principle applies to all the institutions coming within the purvue of direct departmental control. As we have widened the windows of our hospitals so should we broaden the windows and light spaces of our asylums, prisons and homes for the indigent.

What shall we do with the infected individual? I believe that the practical determination of this problem is the most difficult feature upon which to formulate regulations applicable in all cases. To the individual with wealth, who has not upon him the responsibility of caring for others, who has means and intelligence, the municipality need offer little more than the educational facilities extended by an exposition such as that in which we are at present gathered. To the poor, however, much aid can be given; by the visit of district physicians, district nurses especially trained, and by devoting all possible energy to the proper education of such sufferers much may be accomplished. They should be taught how to care for themselves and to care for others, and above all there should be impressed upon them the fully established fact that tuberculosis is a curable disease. Take from them the sombre trappings of despair and clothe them in the sunlit garments of hope. Teach them that not only is recovery possible but that with proper care and under suitable conditions it is probable in an ever-increasing percentage of incipient or even advanced cases. Drive home the lesson of sunshine, fresh air, and cleanliness, and cooperate in supplying the requisite food so absolutely essential in combating the malady. I believe that the city should supply suitable hospitals for the care of incipient cases, so situated as to afford the best possible conditions to facilitate recovery. The resources of municipal government would rarely afford luxurious institutions for these cases, but fortunately we have been able to satisfy ourselves that modest, relatively inexpensive and fully adequate accommodations may be secured with a relatively slight expense. Tracts of open ground, conveniently situated are practically always available, and these may be utilized to the very best advantage. For advanced cases hospital accommodations are absolutely necessary and especially is this true of patients who cannot properly be cared for at home. A sanatorium suited for the reception of these cases is within the financial reach of every municipality and I believe we are criminally negligent if we fail to provide it.

THE FUNCTION OF THE TRUE PHARMACIST.[1]

BY

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Let me congratulate the members of the Philadelphia Branch of the American Pharmaceutical Association on the important step they are taking to restore the practice of pharmacy in Philadelphia to its elder and more fitting status among the learned professions. It seems to me time that a larger and nobler meaning be given to the term "pharmacist." The true pharmacist has a high function to fulfil—a much higher function than drawing soda water or handing out "proprietaries" over the counter. When the physician ceased to collect and prepare the drugs that he administered and turned over to the apothecary that important duty, in order to devote more time to his own special studies of diagnosis, pathology and therapeutics, the apothecary became charged with all the responsibilities concerning medicaments that theretofore had rested upon the physician. In the evolution of science and of art, the responsibilities both of physician and of pharmacist have become greater, not less. The individual pharmacist can no more shift these duties upon the wholesaler's or manufacturer's shoulders than I can shift my responsibilities to my individual patient upon the shoulders of Jefferson Medical College, or the County Medical Society, or a medical syndicate organized for commercial purposes. The grocer or the notion dealer, or the six-dollar clerk in the department store, has sufficient knowledge to take a package from the shelf and hand it to a purchaser, or even to decant a portion of it into another container. To do this requires merely the ability to read a label—or perhaps only to recognize a picture. As a physician I look to my brothers of the pharmaceutical profession for greater knowledge, greater skill, and greater assistance than I can get from the grocer's clerk or the errand boy. I am in the habit of consulting with friends in your profession—and I see here some of those who have thus aided me—concerning new drugs introduced from time to time, new uses and new preparations of old drugs, the possibilities of new combinations of drugs, that may have been suggested by the exigencies of a special case, as well as incompatibilities, methods of administration, and other matters in which the physician must in greater or less degree depend upon the special knowledge, training, and skill of the pharmacist. In return, I have been complimented by their inquires on matters concerning which I may have had special information of use to them. There is no reason why this pleasant relation of confidence and mutual assistance should not exist between all physicians and all pharmacists worthy of the name.

Certainly nothing will do more to extend it and to advance the best interests of the profession of pharmacy than the formation of such an association as you are now about to form in Philadelphia, and the determination on the part of the practising pharmacists to maintain a high professional level as scientific men and to resist the conversion of their professional standards into trade standards. I do not intend hereby to cast any slur on trade or tradesmen; I honor both and admit the indebtedness of mankind to both; but it is a fact that standards differ. The standard of the fiction-writer is not, or ought not to be, the standard of the medical author and the standard of trade, "buy cheap and sell dear," is not and ought not to be the standard of the practising apothecary. And here I may touch upon a personal and practical matter concerning the ability of the physician to know the pharmacist as distinguished from the drug-and-soap-seller. It is impossible for every physician to know every pharmacist or even to know who is in charge of the prescription desk at a certain drug store. Frequently I am asked "Shall we take this prescription to so and-so at the corner or shall we take it down town?"—or up town, as the case may be. Now if I can have a list of members of the local branch of the American Pharmaceutical Society, and so-and-so's name appears there, I can be reasonably sure that prescription and patient will be safe in his hands; that, for example, when I prescribe infusion of digitalis he will not thwart my purpose by dispensing a dilution of a fluid extract bought from some wholesaler, but will give a real infusion made from the best leaf obtainable; that when I prescribe an imported crystalline strontium bromid, he will neither fraudulently dispense an impure domestic salt which will make my patient vomit, nor stupidly substitute fluidounces of an imported solution for the solid ounces ordered of imported salt. I am citing only a few of many such instances that have actually happened when my prescriptions have been taken to patent-medicine and perfumery stores masquerading as pharmacies; and you will admit that these instances justify me in the direction to take such a prescription to some definite drug store where I know scientific pharmacy is practised. I prefer that this should be near the patient's home if possible, but sometimes I do not know any such pharmacy in the desired neighborhood. Now the list of your members will help me in this very much, I think, as it will be, so to speak, "An Index of Dependable Druggists."

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[1] Address delivered before the Philadelphia Branch of the American Pharmaceutical Association, March 28, 1906.

Do you realize, gentlemen, how much the progress of practical therapeutics lies in your hands? If, because of an impure or imperfect preparation, a drug that I have chosen after considerable thought, as the one best adapted to the particular conditions of a special case, fails to give relief, not only the individual patient suffers, but also my professional judgment is misled as to the practical effect of the remedy; and every other patient that comes under my care is to that extent deprived of a possible agency of relief. I am misled also as a teacher and as an author. It is for this reason that when such disappointments happen in cases in which I am reasonably sure of my ground, I say, "Well, here's another prescription; take it to so-and-so." I don't say that the first druggist is at fault; I don't know that. But I determine to give my patient and my science the benefit of the doubt rather than abandon what seems to be the best line of treatment. In chronic cases we can often thus protect ourselves. But how about acute cases, or how about sudden emergencies in chronic cases of heart disease, in which the effect of musk, for instance, may, as I have repeatedly seen, snatch a patient out of the jaws of death, and in which the dirt commonly dispensed for musk is worse than useless?

A tremendous responsibility rests on the conscientious pharmacist. He is always the active assistant of the physician; he is frequently the pathfinder and guide of medical progress in certain directions. Therapeutics, so far as it relates to drugs, must advance in the future through the active and intelligent cooperation of chemistry and biology, of pharmacy and medicine. In such advance I look to this society confidently for leading and for light.

PROVISION FOR THE INSANE POOR OF THE CITY OF PHILADELPHIA.[1]

BY

JOHN B. CHAPIN, M.D.,

of Philadelphia.

In this assembly there need be little to present relating to the condition of the insane poor in the Department for the Insane of the Philadelphia Hospital, or the total unfitness of that receptacle for their care. The services of the several departments of the Philadelphia Hospital are performed by a visiting staff of 180 physicians and surgeons, the majority of whom are members of this society. Their unrewarded, faithful service rendered to the poor will ever be remembered as the glory of the profession. As a representative of the medical profession our society has a standing, and can, and ought to make its voice heard in the interests of the public service for the care of the sick, the injured, and the insane poor. Entering the abodes of distress and even wretchedness in the discharge of professional duties, and acquainted with the helplessness of families to cope with the condition of insanity when it occurs, it is a duty of this representative body of the medical profession to express an opinion of the inadequacy of the present public system for the care of the insane poor, and place the responsibility for its betterment where it belongs, lest it lay itself open to a charge of indifference to its moral obligations.

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[1] Read before the Philadelphia County Medical Society, Jan. 24, 1906.

It is a late day to discuss as a sociologic problem the duty of a community to care for its insane when it has been, and is recognized and conceded as an obligation resting upon all civilized countries, however great the difference that exists in the manner in which the service may be performed. Our community, not ordinarily behind, but rather disposed to boast of the multitude of its charitable undertakings, has shown a marked indifference to a proper system of caring for the insane poor. Perhaps the traveler can still find in some of the frontier counties of the country a house known as the county-house, or county poorhouse. It may be simple in design, but the system under which it is administered is so broad that the house accommodates every form of human misery and degeneration. The honest and dissolute, idiots, the insane, men, women, and even innocent children and orphans have sometimes been known to be promiscuously herded together, the whole supervised by some worker in small politics, who is supposed to have earned the office—not from any peculiar qualifications—but as a reward for political activities. In contemplating the Charities Department at Blockley, it has seemed that in its incipiency it may have been not unlike the primitive poorhouse that can still be seen in parts of our country and that by gradual enlargement and accretions it has reached its present congested condition, so that the system is in danger of collapsing from being overloaded, or from general debility.

Our plea is, that by what may be done by this society and others, the public conscience may be awakened to take action for the betterment of the provision for the care of the insane of this city and county. In urging any plan it is essential it should be premised that we have in mind the class of the insane who are poor and without a means of support under the visitation of insanity. The fact should further be recognized that statistics of hospitals for the insane, cared for at public expense, show without exception that a small minority only have been dependent upon public charity prior to their insanity. The very large proportion of the number have been self-supporting members of the community in which they lived. They have fallen out by the way, as it were, from the great army of the employed, and, overtaken by sickness or the exigencies incident to human existence, are absolutely helpless and dependent. They and their families, however, possess the ties of mutual affection common to our humanity and their feelings and sensibilities entitle them to respectful consideration. They have a standing as rent payers, and directly and indirectly as tax payers by even contributing to the extent of a farthing toward their own welfare and that of the community in which they live. In another view they are representatives of the debris and results of stress and strain which accompany an intense civilization, or the vices and degenerating influences of bad living from which society cannot escape. From whatsoever causes, they are here, and the number of dependents increases from year to year by no known ratio, presenting a problem which seems hopeless of satisfactory solution, and a spectacle sad to contemplate, continuing already too many years.

Whatever may be proposed to improve the present situation should be in accordance with some governing principles. Something can also be learned by observing how conditions similar to those seen in this city have been successfully met in other communities. It must be conceded as the first essential that there must be an absolute divorcement or separation of the insane from an almshouse, and all the associations and traditions of such an institution, whether the State should take over this work, or if continued by the city. The new hospital should be located upon a farm in the country which would afford occupation out of doors for a large number, as well as opportunities for exercise in the open air and sunlight. As the new hospital would stand for the medical idea that insanity is a disease, or a condition of disordered mental functions, there should be a qualified medical director who should be clothed with powers to direct, and in no way subject to a so-called lay superintendent or warden, who would soon or late stand for some political organization. The medical director should be given with absolute authority to select and discharge all persons engaged in the immediate service of the hospital, and the care of patients. Complete authority ought to be accompanied by responsibility for good results. As the majority of the patients would be of the chronic class, there would be a diversity of out-of-door occupation which a farm and a large community would afford, and an opportunity for exercise where the sunlight could not be measured by the square foot. The occupations with which patients are familiar would be so various in such a large community that a number of industries could be introduced. Among some of the results that would be realized by the chronic class would be the formation of orderly habits of living and occupation, a decided improvement in the mental condition of the whole number, and the restoration of many to their homes and families.

Whether this great work should be undertaken by the city or the State is a question about which the county society might not be expected to commit itself, but if it is well done it is immaterial. There are strong arguments, however, that the State should erect the buildings, own the whole plant, and that the governor should appoint a board of managers to administer the hospital affairs. Then there would be a reasonable guaranty that a higher standard of care would be maintained, the institution be free from the demoralizing influences of politics, the downward drag of the almshouse, and responsibility be somewhere centered. Considering the population of the south eastern hospital district, which includes the city of Philadelphia, an impression exists, the correctness of which I have not been able to verify, that less State care accommodation apportioned to population has been provided by the State in proportion to that which has been provided in other hospital districts of the State.

After a variety of experience with State care, city or county care, the State of New York has taken over all city hospitals for the insane, and the only legal place of detention for the insane poor in that State is in a State hospital, managed by a State board. Boston is the only city or locality in Massachusetts exempt from the general State Care Act. The Boston City Asylum is governed by a board of unpaid managers appointed by the mayor. The State Board of Insanity of Massachusetts say the situation there is not satisfactory, and many would be glad to see State care of the insane extended to that section.

There are two standards and wide differences of care existing in Pennsylvania. By standard of care as used here we mean to be understood the average weekly amount expended for maintenance of patients. In the State hospitals of Pennsylvania the average weekly cost is $3.65. In the Philadelphia Hospital, $2.76, of which sum $1.59 is paid by the State and from other sources, and $1.17 is contributed by the city of Philadelphia. The State of Massachusetts reimburses the city of Boston at the weekly rate of $3.25 for each public patient. The average cost of support in New York State (1902) was $3.10 weekly, which is paid from a State tax levied specially for the support of the insane poor, the whole number under State care being near to 25,000. From this brief statement and comparison of expenditures for the care of the insane in near-by localities one can draw conclusions, but better still, by an actual inspection. From general observation I am convinced the tax payers have willingly everywhere supported any measures calculated to elevate the standard of care of the insane, and they also equally complain when the standard of care is allowed to degenerate or to be misdirected. This they have a right to do, and will do.

Assuming that a suitable site has been secured, accommodation for at least 1,800 patients, together with the necessary officers and employes should be provided as soon as practicable. A scheme should also be agreed upon to meet the inevitable annual permanent increment. This increase may vary from year to year, yet in twenty years, or looking to the future, it will more than double without doubt, as no reduction of the aggregate can be looked for.

Of the expectancy of cases of insanity certified for admission to the hospitals in Philadelphia for the decennial period ending with 1900, it appears that one new case to every 1,333 of the population of the city was certified for admission to the city institutions or sent to the State hospital at Norristown. This does not include the whole number of persons who actually became insane, as many were under private care and were not certified for admission to a hospital. During this decennial period the increase of cases certified for admission to the Philadelphia hospital and the Norristown hospital was 47 percent. The whole number chargeable to Philadelphia county the first week of January of this year was 3,161. According to this ratio, in 20 years the number in public charge would exceed 6,000.

On December 1, 1905, there was in all of the State and incorporated hospitals, 8,325 patients. According to the probability or expectancy of recovery, it is stated that it may be estimated that of this number only 408 will recover, or say five percent, from which statement may be inferred that a similar congestion of chronic cases is the normal experience.

In the study of plans, suggestions of a valuable nature may be observed in the State hospitals of New York where satisfactory results have been attained, or in other nearby States. The usual plans of Pennsylvania hospitals would be wholly inadequate and attended with great and unnecessary cost. The plan of erecting plain, substantial blocks, or detached buildings, or buildings supplemental to an administration building, which could be added to from time to time, might furnish a suggestion for such a scheme as we have in mind. The detached blocks would furnish great facilities for classification for special classes—as infirmary wards for dirty cases, bedridden, and infirm patients. The classification should be sufficient for all demands. The danger of a general destruction of buildings by fire would be reduced to a minimum by their separation. The details must be worked out by an architect, but the scheme should not be considered an opportunity to display the higher flights of his profession. The buildings should be appropriate for the object for which they are contemplated—the success of the plan redounding rather to the glory of the city than the erection of palatial buildings for the poor. The plan presented would permit of additions and expansion from time to time as might become necessary.

As what has been presented would form an aggregation in the nature of a colony made up mainly of chronic cases and convalescents, there remains to be provided accommodation, on the site of the present buildings, on the assumption that the pauper population is to be removed, for the temporary reception of emergency cases, acute cases of delirium from any cause, persons arrested by the police requiring temporary detention on the sudden outbreak of insanity. Many such patients after a brief treatment would be discharged, if recovery takes place, or if necessary, transferred to the colony. The extent of the accommodation would be liberal if limited to 75 of each sex.

It should be in fact and name a hospital equipped for the best hospital care of acute cases. Here all insanity cases would be first examined and their status determined.

The adoption of some plan, the outline of which has been presented, is the only scheme, it is believed, which will solve the present problem of the disposition of the large number of chronic insane persons now in the Philadelphia Hospital. Groups of detached blocks would take the place of large congregate buildings, to which additions could be made as necessity required. The cost of construction per bed would be reduced fully one-half less than the usual average, and with large numbers in the institution, the average cost of yearly maintenance would be lessened.

It should be clearly understood that we are not urging but rather discouraging lavish expenditure for the construction of a great congregate hospital to ornament the city that shall prove rather to be an exhibition of the skill of the architect than an appropriate structure for the care and healing of the sick poor. We do desire and insist that each patient shall have a proper allotment of cubic and superficial space; that some plan of ventilation shall be devised to change the air; that the houses shall be uniformly warmed to a proper temperature, and each patient be furnished with a bed, bedding, and a seat; that a dietary shall be established to meet the wants of the able-bodied, as well as the sick and feeble; that a medical service of a high standard shall be organized for the reception or emergency wards—physicians who will enjoy the confidence of the profession, the friends of patients, and who shall be in sympathetic touch with them in their double affliction of sickness and poverty. This we have a right to demand as a profession, as citizens and sympathizers with a distress that may afflict any one in our community, and if well done, what tax payer will arise to question the proposed expenditure? To do less than is proposed will result in gradual degeneration of the whole service, as has been shown in every municipality that has attempted to care for the insane poor, separate and independent of State supervision and control. If a plea is entered to let the present system have another chance or trial before action is taken, the answer may be made that after experience of many years nothing is shown worthy of commendation or perpetuation to offset the public criticisms that have been made for a period of 30 years by various bodies, and physicians of eminence—notably a report of recent date by a commission appointed by His Honor the Mayor composed of President Dr. Mills, Dr. Dercum, and Dr. Pickett.

DIGEST OF LITERATURE.

THE THERAPEUTICS OF SODIUM CHLORID.

BY

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Recently the elimination of the chlorids from the diet has been advocated in the treatment of both nephritis and of epilepsy, but upon different grounds; in the former to relieve the kidney and in the latter to prevent the elimination of the bromids and at the same time to substitute them for the chlorids in the system. Before practising so energetic a treatment as the elimination from the diet of a salt of such vital importance as sodium chlorid it is advisable to enquire into its physiologic functions and as to what pathologic results will arise on its withdrawal. Sodium chlorid is the most important of all the inorganic salts in the body; the plasma contains 0.7 percent, the lymph 0.6 percent, the saliva 0.84 percent, the succus stomachi 0.2 percent, the pancreatic secretion 0.3 percent, the bile 0.7 percent, the muscle 0.7 percent, cerebrospinal fluid 0.05 percent, milk 0.23 percent, the vitreous humor 0.68 percent, the sweat 1.0 percent, amniotic fluid 0.56 percent, edematous fluid 0.85 percent; certainly a salt so widely distributed and in such quantities through every organ of the body must have some role of great importance in the economy.

The toxicity of the different inorganic salts is worthy of note especially with reference to the difference between the potassium and sodium salts. The former is about 14 times more toxic than the latter, consequently it is of importance that the potassium salts should not be allowed to accumulate in the system or to replace those of sodium.

Potassium bicarbonate,	lethal dose	0.05	per kilogram.
Potassium chlorid,	" "	0.18	"
Potassium phosphate,	" "	0.26	"
Potassium sulfate,	" "	0.16	"
Sodium chlorid,	" "	5.17	"
Sodium sulfate,	" "	9.00	"
Sodium phosphate,	" "	6.00	"
Magnesium chlorid,	" "	0.46	"
Magnesium sulfate,	" "	0.54	"
Calcium chlorid,	" "	1.011	"

One of the functions of sodium chlorid is to keep the fluids of the body at a fixed density, thereby maintaining the tissues at their proper percentage of water. In the plasma its function is to keep up the density so as to permit the suspension of the red corpuscles, at the same time it acts as a solvent for the serum globulin and albumin, permitting the distribution of nutrition to every part of the body; it is also a solvent for many of the waste products of metabolism in fact the plasma is the ideal solvent for the various substances either for nutrition or elimination with which it comes in contact and any variation in its percentage composition renders it less capable of performing its functions. Sodium chlorid also has a direct action upon elimination as the quantity eliminated in the urine bears under normal conditions a direct relation to the total solids and especially to the total nitrogen; whenever an excess of any salt is given there is always an increased amount of sodium chlorid eliminated with it, more especially is this observable with urea; further if the sodium chlorid of the diet is very much reduced, pathologic conditions arise from the retention of the substances which should be eliminated. It is possible, by the administration of the other salts in excess, to replace the sodium chlorid in the organism to a very great extent but invariably with the production of pathologic symptoms; under the continuous administration of the iodids and bromids, as in the treatment of syphilis and epilepsy, hydroiodic or hydrobromic acid appears in the succus stomachi instead of hydrochloric acid, which has much to do with the digestive disturbances occurring during continuous treatment with these drugs.

Contractile tissues will not contract in pure solutions of nonelectrolytes, as sugar, urea, albumin, etc., but contractile tissues differ in the nature of the ions which are their most favorable stimuli; they are divided into three classes: Those which produce contractions as Na; those which retard or inhibit rhythmical contractions as Ca and K; those which act katalytically, that is they accelerate the action of the Na though they do not themselves produce rhythmical contraction as H and O. Sodium chlorid is therefore necessary for the contraction of both voluntary and involuntary muscle. Sodium chlorid is undoubtedly the source of the hydrochloric acid of the succus stomachi, so vital to the digestive process, as without its stimulating action upon the mucous membrane of the duodenum neither enterokinase nor secretion is formed, consequently active pancreatic secretion is inhibited.

Sodium chlorid is of especial value in the digestion of and assimilation of vegetable food, especially of the vegetable proteins which are much less soluble than animal proteins. Of all inorganic salts the only one we add to our food and the only one we crave is sodium chlorid. Especially does this craving for salt exist with the graminivora who travel immense distances to obtain it; the graminivora take with their diet a far larger proportion of inorganic salts than the carnivora or omnivora but with this difference that vegetables contain a much larger proportion of potash salts than flesh, consequently there is an imperative demand for sodium chlorid by the organism to replace the potash salts and to assist in their elimination. It is a fact well known by cattle breeders that the animals will not thrive or fatten without a sufficiency of sodium chlorid. The carnivora on the contrary obtain all the sodium chlorid they require in the blood and flesh and therefore have on craving or necessity for additional salt. It has been proved by experiment that the elimination of 18 gm. of K_2O causes a loss to the body of 6 gm. NaCl and 2 gm. of sodium salts other than chlorids; a man living principally on potatoes will take about 40 gm. of potash salt per diem, showing why the desire for salt is so imperative with this vegetable.

Experience has taught man the physiologic value of salt, nations who are vegetarians set a high value upon it, it being used in barter and in religious ceremonies, commanding a high price in districts where it is absent. Flesh eating nations do not set any value upon it, especially those who live on uncooked meat some of whom dip each mouthful into the blood of the animal as a sauce, or drink it, thus obtaining all they require. Civilized man removes all the chlorids from his flesh by bleeding the animals and often soaking the flesh in water, and then adds salt as a condiment, the recipe of the cookery book being "season to taste."

Sodium chlorid is present in the saliva and is swallowed with the food; the succus stomachi contains 0.2 percent where it probably has a physiologic role, dissolving mucus and arresting bacterial growth both in the mouth and stomach. It also has an effect upon the stomach secretion; M. Bonnigen found that if he introduced milk into a dog's stomach with a Pawlow fistula and added 2.25 percent sodium chlorid, that the amount of succus stomachi secreted was much reduced, as well as the percentage of hydrochloric acid, but that the digestive power was not affected. In a normal man he found that the addition of 4 gm. of sodium chlorid made no change in the succus stomachi or motor power of the stomach but that 7 gm. distinctly reduced the acidity. Vincent has reported that in a diet containing very little sodium chlorid hyperchlorhydria developed with gastric pain, but if the diet was continued over a long period the hydrochloric acid was diminished. L. Wolff administered 5 gm. of sodium chlorid to a few patients suffering from hypochlorhydria but found no increase in the amount of hydrochloric acid secretion. In a patient with normal secretion a reduction in the amount of hydrochloric acid was induced by the administration of the same dose. Other experimenters have obtained the same results, viz.: That in hyperchlorhydria the administration of from 4 to 8 grams of sodium chlorid after meals reduced both the amount of the succus stomachi and the percentage of hydrochloric acid, but that the administration of small doses, say 9.3 grams, better combined with the same quantity of calcium chlorid in 250 cc. of water before meals, increased both the quantity and the hydrochloric acid percentage as well as improving the mobility. Why an excess of sodium chlorid in the stomach should reduce the amount of secretion is not clear. If the density of the stomach contents is increased the tendency would be to increase the amount of water, which while increasing the quantity would reduce the percentage of acid. The presence of the salt may have an inhibiting action upon the glands. A point of interest regarding the relation of the amount of sodium chlorid to the hydrochloric acid of the stomach is the fact that in hyperchlorhydria the amount of chlorids eliminated with the urine is very low in proportion to the total nitrogen and that in hypochlorhydria the reverse is the condition; so constant is this relation that the writer has used it for some years for the diagnosis of the condition of the stomach secretions, preferring it to the more complicated method of the test-meal which is often very objectionable to the patients, beside being subject to many inaccuracies from the nervousness or idiosyncrasies of the individual.

In fevers, more especially typhoid and pneumonia, the elimination of chlorids by the urine is often reduced to a mere trace, which can only be accounted for either by the kidneys failing to eliminate them or the system retaining them for physiologic purposes. The latter is the more probable reason for the retention and it follows that the administration of sodium chlorid in these conditions is indicated. By the use of enemas of normal salt and giving as much as possible with the food I reduced the mortality among the aged insane from pneumonia in Mount Hope Retreat appreciably.

In nephritis it is rare for the diseased kidney to fail in the elimination of chlorids; the substances which are most often retained owing to kidney insufficiency are the products of protein metabolism, viz.: Urea, creatinin, phosphates, sulfates, the potassium salts, hippuric acid and the urinary pigments, the products of carbohydrate and fat metabolism carbondioxid and water do not affect the kidney. The diet of nephritis should therefore consist principally of carbohydrates and fats; the amount of protein should not be greater than is represented by 7 grams of nitrogen eliminated in the 24 hrs. by the urine. Under such a diet the amount of chlorids estimated as sodium chlorid should be about 5 to 6 grams. Should the chlorid elimination be greater than above the amount in the food may be reduced, but the natural craving of the patient will reduce them to the proper quantity in a few days. As the quantity of protein in the diet is reduced, which should always be done gradually, the appetite will also decrease and the amount of food taken will eventually be the minimum required to satisfy the physiologic needs of the system. Beside the economy of energy, both in digestion and elimination resulting from the reduced diet, there is a rest obtained for the diseased kidney which cannot be otherwise than of great therapeutic value.

The quantity of creatin and creatinin eliminated depends largely on the amount in the food; it is contained in meat extracts, broths, etc., but is only present in eggs and milk in traces. By giving boiled meat, eggs and milk, the quantity to be eliminated can be reduced to a minimum; a small amount is formed in muscle metabolism and cannot be reduced by diet. The urinary pigments appear to be eliminated with difficulty; urobilin is the pathologic elimination of the liver; its presence in the urine is therefore proof positive of hepatic insufficiency. Crofton recommends the administration of 10 or 15 grains of sodium glycocholate mass per diem to stimulate the biliary secretion. Hematoporphyrin is produced from the destruction of red corpuscles and is increased after the administration of sulphonal and trional, neither of which should be used as hypnotics. Phosphoric acid is difficult of elimination; owing to the large amount of phosphates in milk the quantity excreted on a milk diet is greater than on an ordinary mixed diet; by adding calcium chlorid to the milk or administering about 2 grams per diem of calcium carbonate, insoluble calcium phosphate is formed which is eliminated in the feces; the addition of calcium chlorid to the milk aids in its digestion with most patients. Urea and the sulfates are products of protein metabolism and can be reduced in quantity by the reduction of the protein in the diet. Hippuric acid is formed from the benzoic esters contained in vegetables and is eliminated with difficulty by the diseased kidney, consequently green vegetables, cranberries and fruits containing kernels should be forbidden; pears, apples, raspberries and grapes contain only traces of benzoic acid and are a useful adjunct to the diet. Alcohol should only be given in small quantities except in cardiac weakness; coffee, tea and tobacco should be used with moderation as they dissipate the energy of the heart instead of increasing its strength. There is a popular prejudice against red in favor of white meats; this is however not supported by chemical analysis nor by clinical experience; the amount of extractives in red and white meats is about the same; it is more a question of the amount eaten than the kind of meat upon which depends the evil effects seen in meat diet in disease; the real test for nitrogenous diet is the total nitrogen in the urine which should never excede 7 grams in the 24 hrs.

Regarding the inorganic salts sodium chlorid is eliminated with ease while the potassium salts are more toxic, consequently the diet should contain as little potassium as possible; potatoes should be debarred and rice substituted as far as possible it containing but small amounts of potassium in proportion to sodium; potatoes contain 28 times as much potassium as rice.

It is very easy to prescribe a diet but very difficult to get the patient to adhere to it; in all diets the tastes of the patients should be consulted as within certain limits the cravings of nature are for the most easily digested foods; when the diet is not palatable there is a failure of the psychic secretion which can be avoided with a little attention to detail and avoiding monotomy. A very good working formula subject to variations according to the tastes of the patient is, milk 1000 cm., boiled cream 275 cm., which contains about 37 grams protein, 77 grams milk sugar, and 100 grams fat, equal to about 1,500 calories; after the first few days the milk may be increased to 1,500 cm., boiled cream 375 cm., rice 50 grams, zweibach 50 grams, butter 50 grams, sugar 20 grams, preferably milk sugar as it is less liable to ferment and is laxative, containing about 2,900 calories. In the convalescent stage the milk should be reduced, substituting eggs, boiled meat or fresh cream cheese, the total not to contain more than 60 grams of protein; later white bread, legumes, oats, barley, fruits, and especially rice can be added. Spices and condiments should be avoided as well as those vegetables which contain active oils as radishes, garlic, onions, asparagus, etc. Regarding the chlorids they should never be reduced below physiologic needs, viz., an elimination by the urine of from 5 to 6 grams.

In the bromid treatment of epilepsy it is probably true that the patient can be more readily brought under the influence of the grud by the elimination of chlorids from the diet, the reason being that the bromid salts are substituted for the chlorids, and the latter not being present, the former are not eliminated and accumulate in the system, the bromids are not readily eliminated; a patient who has been dosed with bromids will continue to eliminate them in the urine a month after their administration has been suspended. The advantage of the treatment by chlorid elimination may be that a smaller amount of bromid is required, which may be economical, but an insufficiency of chlorids produces a pathologic condition of retention of substances which ought to be eliminated which cannot be otherwise than detrimental to the patient.

The physiologic value of sodium chlorid is too great to be neglected in practice and its elimination from the diet will produce a pathologic condition; it cannot be good therapy to treat one pathologic condition by the creation of another.

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THE USE OF CLOETTA'S SOLUBLE DIGITOXIN (DIGALEN) IN CARDIAC THERAPY.

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Digitalis is, and will probably long remain, the mainstay of cardiac therapeutics. That our previous methods of administering this drug, however, have left much to be desired, is manifested by the numerous attempts to find a substitute for it. The principal objections to the use of digitalis are:—(1) The great variability in the strength of the crude leaves, amounting sometimes to 400 percent; (2) the symptoms of local irritation produced by its use; (3) the slowness with which its effects are produced; and (4) its cumulative action. In view of these objections, and in a line with modern alkaloidal therapeutics, various attempts have been made to obtain the active principle of digitalis in a therapeutically applicable form. Investigations have shown that the more important constituents of digitalis leaves are three glucosids, digitalin, digitalein and digitoxin. The first two have no marked effect upon the heart, but cause a contraction of the bloodvessels in the splanchnic area, with reflex dilation of the peripheral vessels. Digitoxin more nearly represents the action of crude digitalis than either of these. This glucosid was first isolated in a crystalline form by Schmiedeberg, and it has been repeatedly tried as a substitute for digitalis preparations. Although allowing of more accurate dosage, it still retains the irritative and cumulative properties of the leaves.

In 1904 Cloetta announced that after five years of experimentation he had succeeded, by a very complicated process, in producing from digitalis leaves an amorphous powder, shown to be chemically indentical with Schmiedeberg's digitoxin. It differs from the latter, however, in being readily soluble, nonirritant, easily diffused, rapid in its action, easily eliminated, and noncumulative. These properties permit of its being used by mouth, by rectum, hypodermically or intravenously. At present, Cloetta's soluble digitoxin is dispensed in a watery solution containing 20 percent glycerine, under the name, "digalen." One cubic centimeter of the solution contains 0.3 mg. soluble digitoxin, at which Cloetta places the average daily dose. When given by mouth, there is a total absence of those gastric disturbances which so frequently accompany the use of other digitalis preparations. When given subcutaneously, there may be a moderate amount of local burning for 1-3 hours, and occasionally some swelling, which disappears completely in a few days. No local symptoms whatever have been observed after its intravenous injection.

When given subcutaneously, Kottmann found that the action of the digalen began to be manifested within 24 hours, and was characterized by increased arterial pressure, increased diuresis, and often slowing of the pulse. A much more rapid effect was produced by injecting the drug directly into a vein, a procedure that was found to be perfectly harmless, if done with proper antiseptic precautions. The viens of the bend of the elbow are usually selected, being made more prominent, if necessary, by throwing an elastic ligature about the arm. The needle of the syringe is introduced in the direction of the blood current, and its access to the lumen of the vein is usually manifested by the mounting of blood into the syringe. If this does not occur, aspiration may be tried, in order to demonstrate that the needle is in the vein. The ligature is then loosened, and the injection is made very slowly, to avoid thrombosis. Usually the blood-pressure begins to rise within five minutes and reaches its maximum in a half to one hour. Both Kottmann and Pesci have found that the ordinary dose of 0.3 mg. is insufficient for intravenous use in cases when pronounced and rapid action is required; they have therefore employed larger doses, 1.0 to 1.5 mg., with excellent effect and without any toxic manifestations.

The investigations of Hochheim, Sasaki, Kottmann, Vlach, Livierato and others, show that the physiologic action of soluble digitoxin is in every way comparable to that of digitalis leaves, except that the effects are much more rapidly produced. The contractility of the cardiac muscle fibers is increased, thus strengthening the systole and raising the blood-pressure, which latter effect is also partly due to the action of the drug on the bloodvessel walls. The refractory phase of the cardiac cycle is prolonged, diastole is lengthened, extrasystole is abolished or diminished in frequency. and the pulse thus becomes slower, fuller, and more regular. Digalen has no effect on the tachycardias of toxic origin, such as occur in exophthalmic goiter or tuberculosis, nor does it slow the pulse in cases of compensated valvular defects. It is markedly diuretic in dropsy due to failure of circulation, the diuresis usually beginning within two or three days after the administration of digalen is commenced, and lasting some time after it is stopped. At the same time the edema and other effusions rapidly disappear, likewise the cyanosis, dyspnea, bronchitis, and other symptoms of disturbed circulation. Livierato found, that in cases of cardiac dilation, the area of heart dulness was markedly and rapidly diminished under the influence of the drug.

Digalen finds its field of greatest usefulness in mitral disease with failure of compensation or with renal complication, in which cases it may be given by mouth or subcutaneously. It is also useful in degenerations of the heart muscle, if not too advanced, and in aortic disease complicated by mitral failure. Pesci even recommends it in pure aortic insufficiency with cardiac asthma or angina pectoris. In the latter case he says it is not contraindicated by high blood-pressure and may be given intravenously in anginal attacks. The average dose of 0.3 mg. may be given by mouth 1–3 times daily, or subcutaneously once or twice a day. On account of its bad taste, Bibergeil recommends its administration in sweet wine. Schwyzer uses digalen subcutaneously until the desired result is obtained, and then continues the effect by small doses of powdered digitalis administered by mouth. When a rapid action is required, as in severe cases of cardiac asthma, it should be given intravenously, which method is also recommended in the cardiac failure of acute infectious diseases, pleurisy, pneumonia, etc. Freund reports its successful use in cardiac weakness following chloroform narcosis, and in acute dilation from overexertion. The initial dose for intravenous injection should be 1.0 to 1.5 mg., repeated in 12 to 24 hours if necessary, or diminished in subsequent administrations as indicated.

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RECENT EDITORIAL OPINIONS.

Journal American Medical Association.—VARIABLE TEMPERATURE THERAPY OF FEVER. The treatment of tuberculosis and allied diseases in the open air appears to be leading to the general impression that other fevers of whatever origin may best be treated in like manner. Healthy persons live under temperature variations of 20° to 40° F. each day and this variation acts as a stimulant to metabolic processes in the body. In this way it appears that the reactions against disease are to no small extent produced. Open-air treatment of pneumonia at certain hospitals has given good results. The conclusion is that cold air should be admitted much more freely, especially to fever patients, than has been done. There has been entirely too much dread of cold air and of the effects of draughts.—MENTAL HEALTH OF SCHOOL CHILDREN. Stories of children suffering from overwork in school are numerous each spring. Many are exaggerated but each June there is an increase in the number of reports of mental disturbance. Most of such children are not robust either of mind or of body, but these are the ones specially to be guarded. Medical inspectors should at this time of year take extra precautions to find all children developing even slight mental peculiarities. It is now that prophylactic measures for another year should be taken.—DUST REMOVAL, NOT DUST DISPERSAL. Since the invention of the vacuum process, old-fashioned methods of removing dust seem particularly obnoxious. In houses, expecially where there are children, it is advisable to brush clothes in some segregated part. There is no doubt that many of the so-called summer complaints are diseases of dusty weather rather than of hot weather. Especially when traveling do the dangers of dust become serious. Hygienic measures are needed on cars as well as in houses and physicians should be leaders in the work of discarding old methods. —INSANE ASYLUM SCANDALS. The investigation of several insane asylums has lately been under way, and, though these institutions more than others are usually the subjects of jealous scrutiny, there is too much ground for the existing lack of confidence in them. In this country they are too much under political control. However, the abolition of this feature would not entirely do away with scandals. What is needed, in addition to this abolition, is supervision by higher authorities as for instance the British commission in lunacy. Further, there should be promotion, by merit and education, of the medical staff. The members of the staff should be given authority commensurate with their responsibility and there should be no undue secrecy in the internal workings of the institutions.—VIRTUE ITS OWN REWARD AT SAN FRANCISCO. All except physicians who rendered special services at San Francisco during earthquake troubles have received pay therefor. Militiamen, plumbers, mechanics, nurses, have properly been thus requited but for physicians, though as a rule most called upon for special knowledge and skill, there has been no provision whatever. Governor Pardee appreciates the condition of affairs and says the devotion of the physicians will be prominent in the history of the disaster. Though this may seem poor consolation for those who suffered much, perhaps the greatest of any class of citizens, it is something for them to feel that they lived up to the best traditions of the profession.—ADVANCE REPRINTS OF SECTION PAPERS. The departure made at the Boston session by the Section on Ophthalmology previously furnishing reprints of the papers to be read, appears to have been a success as an attempt is to be made to repeat the work at Atlantic City next year. The discussions were made better without coming entirely under the criticism of being "cut-and-dried" statements. The plan requires energetic and cooperative action by section officers and readers of papers; the expense is also considerable. To make such a change in all the sections would raise practical difficulties that might be hard to overcome. The subject, however, is worthy of consideration.—PHOTODYNAMIC ACTION. This term is applied to the toxic effects exerted by fluorescent substances in the presence of light. It is not identical with the absorption of light. Among the substances possessing such action are eosin, erythrosin, fluorescin and acridin. Most bacteria and fungi are susceptible to photodynamic action and some ferments are affected by it. The subject is not well worked out but it is known that eosin and other anilins act injuriously upon diphtheria and tetanus toxins and antitoxins, ricin and snake venoms. Superficial necrosis can be produced by injecting a fluorescent body under the skin and exposing the part to sunlight. This has been employed in the treatment of superficial tumors. Photodynamic action may become of real value as a therapeutic agent.—SURGICAL VALUE OF THE DIFFERENTIAL LEUKOCYTE COUNT. Gibson regards the differential leukocyte count and its relation to the total leukocytosis as the most valuable of all blood-examinations in diagnosis and prognosis of acute surgical diseases. The chief value is in indicating the presence of suppuration or gangrene, the increase in polynuclears in such cases being disproportionately great as compared to the total leukocyte count. Gibson has devised a graphic chart with base lines corresponding to 10,000 leukocytes and 75 percent polynuclear cells. The greater the distance between the two the more severe is the lesion and low the body resistance. In addition to being a guide in diagnosis and prognosis, the findings furnish indications for or against surgical intervention.—THE PURE FOOD LAW. During the past year public sentiment became so strong that even indifferent legislators were forced to recognize it and the pure food bill has become a law. In view of the tremendous opposition it seems almost impossible that it has been overcome. The law in regard to proprietary medicines is not all that some physicians may desire but it is certainly stronger than any one dared hope for. The Proprietary Association of America has after all not proved to be so powerful as was thought. But the drug phase is by no means the most important. Manufacturers of dangerous food preparations will now find it difficult to humbug the public. —DEATHRATE IN THE CITY AND COUNTRY. The country is generally regarded as a much healthier place than cities but reports of the census bureau do not support this view. Many seriously ill people go from country to city and later help swell the mortality statistics of the latter, but even with this factor some States show but little difference between country and urban mortality. In Rhode Island the country deathrate is as high as that of the cities. A study of the entire question shows that the difference between country and city is not one essential to location but depends upon the sanitary precautions exercised. Some country places are unhealthy and physicians need to be careful in advising patients or convalescents as to the choice of summer residence.

Boston Medical and Surgical Journal.—REPORT OF MASSACHUSETTS STATE BOARD OF INSANITY. The seventh annual report of the board is encouraging. The removal of the insane from almshouses was entirely accomplished during the year. Relief from overcrowding has also been secured. Recommendations have been made for an increasing number that should meet the demand for the coming year. There is constant growth in efficiency of the school for feeble minded at Waltham. The suggestion is made that special provision be made for epileptic children under the age of 14. —THE MASSACHUSETTS MEDICAL SOCIETY AND HOMEOPATHY. It is a sign of progress that this society has modified its rules so that homeopathists may become members. Candidates must give evidence that they have studied medicine at an authorized medical school, recognized by the councillors of the society and have received a diploma from such school. No questions will be asked as to the physician's method of treatment, that being left entirely to his conscience. The councillors at present recognize eight homeopathic schools. There are two sides to the question and the situation still offers material for argument but it appears that good will ultimately result from the action of the State society. It will enable medicine to present a more solid front against manifest quackery.—MEDICAL INSPECTION OF PUBLIC SCHOOLS. The bill providing for the appointment of school physicians has passed the Massachusetts Legislature and received the signature of the Governor who aided its passage. This is a step in the right direction. The inspection will not only direct attention to more obvious ailments but should do much toward the proper classification of school children.—A CONGRESS ON QUACKERY. Such a congress recently met in Paris for the purpose of discussing and repressing illegitimate methods of practice and charlatinism. Quackery flourishes in France as elsewhere in the world and will continue to do so as long as men find disappointment in the regular practice of medicine and the claims of false systems are advertised. The campaign to be waged against it is not one of restrictive legislation except in flagrant instances but rather of unceasing education of the public. In spite of the disclosures in the congress it is believed that quackery is on the whole diminishing. The congress itself is another step in the work of enlightening the popular mind.—COOPERATION IN PREVENTION AND CONTROL OF TUBERCULOSIS. Few movements in preventive medicine have made such progress as that relating to this disease. Danger from erroneous ideas regarding tuberculosis has increased, especially because lay organizations have been formed to work without medical supervision. For this as well as other reasons the recent action of the district committees of the Massachusetts Medical Society in organizing for cooperative work along these lines is specially important. Dr. A. T. Cabot was elected president of the State association thus formed. A report of conditions throughout the State is to be made and action taken accordingly. No other State has been organized along similar lines and Massachusetts should be congratulated.

Medical Record.—A NEW METHOD OF DIAGNOSIS IN TUBERCULOSIS. Larier and Ronzoni propose injecting suspected morbid material directly into the mammary glands of guinea-pigs which are still suckling their young. Experiments with sputum from doubtful cases gave positive results in all instances in which tuberculosis was later demonstrated by other means. To prevent abscess formation the sputum was exposed for one hour, and on the following day for 20 minutes, to a temperature of 54° C. before it was injected.—SALT-FREE DIET IN SCARLATINA. Pater gave to one group of patients absolute milk diet, to a second group bread, rice, potatoes, eggs, butter, sugar and milk, all without trace of salt. The latter course was found entirely free from danger and against nephritis appeared to be a better prophylactic measure than the exclusive milk diet. The initial febrile albuminuria often disappeared under this regime and convalescence was invariably more rapid.—FINANCES OF THE AMERICAN MEDICAL ASSOCIATION. The A. M. A. is now larger and richer than ever before and great credit is due the secretary-editor, the treasurer, and the salaried organizer of the Association for this satisfactory condition. The financial reports, however, are not satisfactory and frank publicity in this respect is wanted. Itemized expenditures, clear statements as to dues and subscriptions, and other points are desired by the members of the Association. Want of frankness by those who control the business affairs tends to arouse suspicions. These are probably unjust but they will grow just as long as those in charge of the money of the Association make unsatisfactory reports.—ALLEGED EPIDEMICITY OF APPENDICITIS. Theories favoring this view receive little support from statistics of the French army. In recent years appendicitis increased about 70 percent but affections of the liver and peritoneum and chronic gastric complaints underwent a corresponding decrease, indicating that efficiency in diagnosis plays a part in the apparent increase. The relation between influenza and appendicitis has likewise never been confirmed by facts.—REGARDING FOOD. The subject of eating has lately been discussed at great length in Great Britain. One paper made much ado over the fact that the Cambridge University crew ate eggs as the staple training diet and a surprising correspondence developed as a result. *Punch* suggests that the next sensational announcement of the medical journals will be that food is injurious to life. The question of diet is a very difficult one and no rules can be laid down for all. On one point all authorities are more or less agreed, namely, that the ordinary person eats too much. Too much food with the poor usually means an excess of carbohydrates while the well-to-do accumulate nitrogenous elements.—BREAST FEEDING. The question as to whether the women of the present time are capable of nourishing their offspring is becoming a social and economic problem. Views regarding this point are generally pessimistic. In connection with the fact that there are occasionally women who are physically incapable of lactation, Engel has made a careful study of the breasts of a number of women dying during or after labor. Among them was found a class of cases in which the mammary gland was incompletely developed, the fibrous elements outweighing the glandular portion. No cause for this condition could be discovered. Engel insists that the function of such glands should be cultivated and if taken in time they may become active enough to at least permit of mixed feeding.—THE NOSE IN RELATION TO THE SEXUAL ORGANS. The apparent connection between these organs has led to the supposition that uterine contractions might be excited by stimulation of certain areas in the nasal mucosa. Jerusalem and Falkner have investigated this point and find that the method cannot compare in efficiency with other means. Uterine contractions could be thus aroused, however, in women previously suffering from dysmenorrhea. Another point of interest is the possibility of influencing the severity of labor pains by applications to the nose. This was found to be possible, the application to the genital areas of the nasal mucosa of cocain considerably lessening the pains of labor in 31 of the 40 cases studied. Puerperal after-pains were also notably relieved in the same manner.

New York Medical Journal.—MODERATE EXERCISE AND OUTDOOR AIR. It is probable that few or none of our present day athletes can at the age of 68 duplicate the recent feat of Edward Weston who walked from Philadelphia to New York in less than 24 hours. Specialism in athletics has almost extinguished the cultivation of moderate exercise in the open air characteristic of the first part of the last century. The weight of medical opinion should be in favor of more wholesome exercise without the severe physical strain necessary in most modern athletics. For health purposes it is far ahead of severer exertion.—CAUSE OF HYPERTROPHY OF THE MAMMARY GLANDS DURING PREGNANCY. Recent experiments indicate this is due to the action of a specific chemical substance produced in the fertilized ovum. Lactation appears on the removal of this substance which appears to be inhibitory to gland cells. The specific substance is probably diffusible and not destroyed by boiling.—PITHIATISM. The term, derived from Greek words meaning to persuade and curative, is suggested by Babinski as a substitute for the word hysteria. It is appropriate for the reason that the condition is caused, and may be made to disappear, by suggestion. Babinski offers this definition for hysteria: "Hysteria is a condition of the body which renders the subject thereof capable of autosuggestion. It manifests itself principally by primitive phenomena and occasionally by accessory or secondary troubles. The special characteristic of the primitive manifestations is that they are capable of being reproduced with rigorous exactitude by suggestion in certain subjects and can be made to disappear under the exclusive influence of persuasion. The special characteristic of the secondary hysterical manifestations is that they are strictly subordinated to the primitive troubles."—INASPIRABLE PLEURAL EFFUSIONS. Dufour has seen two cases which support the view of Hirtz that such a condition exists. He explains it by assuming the presence of an absolutely unyielding state of the structures surrounding the effusion. The condition is likened to that of a tightly corked bottle filled with fluid, which of course cannot be aspirated. Clinical observations cannot be ignored and if they are not thus satisfactorily explained, it is incumbent on those who deny the validity of this explanation, as some do, to suggest another in its place.—INTERSTATE RECIPROCITY IN LICENSING. Exception is taken to a number of rulings of the Illinois State Board of Health bearing on this subject. Physicians in the government service are admitted to licensure. Why not those who have resigned from the service? Applicants holding license from other States must present letters of recommendation as to moral, professional and ethical character. This seems superfluous. If one board is to accept another's certificate, let it do so without ifs or ands. The Illinois board will withdraw from the American Confederation of State Medical Examining and Licensing Boards, January 1, 1907. This is regrettable.—ALBUMINURIA AND MENSTRUATION. Two varieties of albuminuria may be termed catamenial, namely, that occurring in women with irregular menses, and that in women with regular menstruation but who have an involutive renal affection, however slight. The subject is of importance because the prognosis is quite different from that of the socalled physiologic albuminurias. In both of the catamenial varieties chronic interstitial nephritis may be the outcome and judicious treatment is therefore in order.—PULMONARY GANGRENE AFTER INCOMPLETE DROWNING. Complications are not infrequent in persons who have been partially drowned and may make their appearance some time after apparent recovery from submersion. Berge cites the case of a woman in the water long enough to become unconscious who, after a few days of pulmonary signs, was considered able to leave the hospital. Four weeks after the immersion, however, well-defined signs of gangrene of the lung developed and persisted for nearly two weeks. The woman finally recovered.—THE VALUE OF SKEPTICISM. It may be wondered if we shall ever know the sequence in pathologic or even normal processes. Phenomena are attributed to factors which later are found to be inactive. Accepted theories have constantly to be discarded. We should therefore be charitable to those who do not at once accept new theories. Presumably the object of every investigator is to arrive at the truth and the honest doubter should never be derided. Reasoning with him to overcome his doubts may very materially clear the mind of the one who originated the new ideas.

Dr. Elizabeth Blackwell. America's first woman physician, who has spent the last 40 years in England, is spending the summer in America.

NEWS AND NOTES.

The Illinois standard of requirements for admission to medical colleges has been raised by requiring all applicants to have completed a nine months' course in chemistry, biology, physics, and languages, in addition to the requirements for obtaining their regular grammar and high school diplomas. This lengthens the regular course a full year. The new subjects may be taken from any recognized institution teaching these subjects in regular course. The measure goes into effect in 1910.

Doctored Meat Fines $72,000.—Dr. B. H. Warren, Pure Food Commissioner for Pennsylvania, says that since the recent crusade against doctored meat in the State 24 western counties have paid $72,000 in fines for selling adulterated and doctored products of the big meat packers.

Death of Manuel Garcia.—Manuel Garcia, celebrated as an operatic tenor, as a teacher of singing, and especially as the inventor of the laryngoscope, died on July 1, at his home in London, aged 102.

Philadelphia Slaughter Houses Condemned.—The Philadelphia Bureau of Health has condemned 37 of the 171 slaughter houses in the city, on account of unsanitary conditions.

Typhoid Caused by High Priced Ice.—Phoenixville, Pa., is suffering from an epidemic of typhoid fever, and the Board of Health will hold a special meeting to discuss the situation. Owing to the high price asked for ice, many disused wells are in service, and this is in a measure responsible for the disease.

Cost of Glorious Fourth.—Fifty-one lives thrown away and 4,551 celebrants maimed or injured, some of them fatally, is the record of this year's "glorious Fourth," as compiled by correspondents of the *Tribune* up to an early hour on the sixth. The loss of life almost equals that of last year, when 59 persons were killed, while every record for the number of injured was broken. Almost 1,000 more were in hospitals or swathed in bandages than on the day following the holiday last year. That the death list will continue to increase for several days is indicated by a large number of dispatches recording injuries believed to be fatal. The deadly toy pistol was responsible for a big percentage of the injuries and six of the dead. How many of the injured are infected with the germ of tetanus cannot be estimated.

Exemption from Examination.—The State Board of Health of Illinois will in its discretion accept, in lieu of the examination provided for, satisfactory evidence of an examination at least equivalent to that exacted by the rules of the Illinois State Board of Health, successfully passed in the United States Army, the United States Navy or the United States Public Health and Marine-Hospital Service, by a surgeon in the service of the United States at the time of making application for a State certificate to practise medicine in the State of Illinois.

New York's Needs for Charity.—The statement submitted to the Board of Estimate calls for a total appropriation of $12,157,000, of which $10,020,000 is to be expended on hospitals, while the remainder, or 7.7 percent, is for almshouses. Among the improvements asked for are a new nurses' home on Blackwell's Island, to cost $200,000. It would serve the double object of replacing the existing dormitories that the association declares are unsanitary, and increasing the capacity of the hospital.

Army health statistics show that an unusual record was made during 1905 in the health of the military personnel. The year was quite remarkable, on account of the rates for sickness and death, not only at home stations, but in the Philippines as well. This is especially true in the matter of typhoid. The situation indicates the practical results of improved sanitary conditions.

The New York Department of Health is compelled to dispense with its corps of nurses because of lack of funds. This unfavorably affects the work of school inspection.

Prizes for Research on Sleeping-sickness.—The King of Belgium, as sovereign of the Congo Free State has appropriated $40,000 to be awarded as a prize to the person who discovers a remedy for sleeping-sickness. Competition is open to all nationalities. In addition, about $60,000 will be given as a special grant to further research on the prophylaxis and treatment of the disease.

Pure Food Bill Passed.—The conference report on the Pure Food Bill was favorably acted upon in Senate and House passing the bill. The report was not discussed at all in the Senate. The section relating to State and municipal control over the original package had been taken out of the bill.

England's Low Birth-rate.—A brief summary of the vital statistics of England and Wales for the year 1905, shows that the birth-rate is the lowest on record. The total of births was 929,457, a rate of 27.2 per thousand, which is 0.7 per thousand lower than the rate for 1904 and 1.8 lower than the rate for the past ten years. The highest rate in the country was recorded in two districts in Glamorgan county, 37.5 in the Rhondda district and 38.3 in Merthyr Tydfil. The population in these districts is almost purely Celtic, the elements being Welsh and Irish. In England the highest birth-rate occurs in the poorer districts in the large cities.

Fortunes in Quackery.—At the present time in Great Britain, says the *London Hospital*, there are no less than 40,000 makers or vendors of patent medicines, and these patent medicines are computed to supply a revenue of £331,000 to the State. Tuberculosis cures, cancer cures, epilepsy cures, paralysis cures, make up the large majority of patent medicines.

Gift of a Sanatorium for the Tuberculous.—Alexander Smith Cochran, of Yonkers, N. Y., has bought 110 acres of land on which he will erect a sanatorium for the free treatment of tuberculosis. The cost of land, improvements, buildings, and equipment will be over $500,000. When completed the sanatorium will be turned over to the city, together with an endowment sufficient to pay all expenses for the first five years. The main building will have 25 beds, but provision will be made for the treatment of many other patients in tents.

German Hospital Chosen for Treasury Department Patients.—The German Hospital has been selected by the United States Treasury Department as the institution in Philadelphia to furnish ambulance service, subsistence, nursing, medicines and interne for the treatment of seamen in the Government service, at $1 a day. The hospital is to provide for burial of deceased patients at $15 each. The medical attendance is to be furnished by a medical officer of the Public Health and Marine-Hospital Service.

Anthrax is alarmingly prevalent in the rural districts about Bridgeton, New Jersey, and the State Board of Health has taken vigorous measures to stamp out the disease.

Infant mortality statistics for New York shows curious differences among the various nationalities in the care of children. The people from only three countries seem to be less successful in protecting their offspring than the native-born Americans. There were in May 430.5 deaths per 100,000 among children less than five years old of Italian parentage. The rate for children of Austro-Hungarian parents was 263, and for those of Bohemian parents 171.6, while the rate for children whose parents were born in the United States was 151.6. The rate among Russians and Poles was only 141; French, 102; Irish, 67.6; Swiss, 54,3; Scotch, 37.2; Germans, 37.1, and English, 27.6.

Pure Water and Disease.—An elaborate French treatise on water-supply seems to prove that other diseases than typhoid are favorably affected by pure water. Twelve cities are enumerated to prove this. Periods of five years before and after the pure water was introduced are taken. It is shown that the average death-rate from typhoid fever decreased 69 in every 100,000 persons, leaving an annual death-rate from that disease of only 20 in the same number of inhabitants. But the death-rate from other diseases fell 410 in every 100,000 persons.

A Case of Typhus in Philadelphia.—The Municipal Hospital has a case of typhus fever. This disease is rarely known in this climate and country. Typhus may be communicated but it is not very contagious when those in its neighborhood obey the rules of cleanliness. It is the first case of typhus known in the city in 18 years.

Government and Public Health.—Prof. Norton, of Yale, advocates the formation of a national department of public health for economic reasons, suggesting the following points:

1. It seems desirable that a United States National Department of Health should be established having as its head a secretary, who shall be a member of the Executive Cabinet.

2. The purpose of the department should be to take all measures calculated in the judgment of experts to decrease deaths, to decrease sicknesses, and to increase physical and mental efficiency of citizens.

3. It is probable that a National Department of Health could be advantageously made to consist of the following bureaus:

National Bureau of Infant Hygiene.
National Bureau of Education and Schools.
National Bureau of Sanitation.
National Bureau of Pure Food.
National Bureau of Registration of Physicians and Surgeons.
National Bureau of Registration of Drugs, Druggists, and Drug Manufacturers.
National Bureau of Registration of Institutions of Public and Private Relief, Correction, Detention, and Residence.
National Bureau of Organic Diseases.
National Bureau of Quarantine.
National Bureau of Health Information.
National Bureau of Immigration.
National Bureau of Labor Conditions.
National Bureau of Research requiring statistics.
National Bureau of Research requiring laboratories and equipment.

4. At this present time of vast undertakings, the magnitude of this department should not be lightly passed over. Great ends must be wrought out through adequate organization. To make headway against death, morbidity, cancer, tuberculosis, we must use dynamite, and in large charges. To equip human machinery, consisting of exceptional men, organized and kept in action for this task with suitable apparatus and adequate supplies, at least $100,000,000 should be annually appropriated by the nation.

5. The Health Department should receive its support: (1) from licenses levied on persons and industries inspected, stamp taxes, and registration fees; (2) from national appropriations.

BOOKS RECEIVED.

[Prompt acknowledgment of books received will be made in this column, and from time to time critical reviews will be made of those of interest to our readers.]

Problems of Babyhood.—By Rachel Kent Fitz, A. M., and George Wells Fitz, M. D., Sometime Assistant Professor of Physiology and Hygiene and Medical Visitor Harvard University. Illustrated by E. A. Bell. Henry Holt and Company, New York, 1906.

The Medical Diseases of Infancy and Childhood.—With points on the anatomy, physiology, and hygiene peculiar to the developing period. By Alfred Cleveland Cotton, A. M., M. D. Professor of Pediatrics, Rush Medical College, University of Chicago, Attending Physician for Diseases of Children, Presbyterian Hospital, etc. J. B. Lippincott Company, Philadelphia and London, 1906.

International Clinics.—A quarterly of illustrated clinical lectures and especially prepared original articles on treatment, medicine, surgery, neurology, pediatrics, obstetrics, gynecology, orthopedics, pathology, dermatology, ophthalmology, otology, rhinology, laryngology, hygiene, and other topics of interest to students and practitioners. By leading members of the medical profession throughout the world. Edited by A. O. J. Kelly, A. M., M. D., Philadelphia. With regular correspondents in Montreal, London, Paris, Berlin, Vienna, Brussels, and Carlsbad. Volume I. Sixteenth Series, 1906. J. B. Lippincott Company, Philadelphia and London, 1906.

A Manual and Atlas of Dissection.—By Simon Menno Yutzy, M. D. Instructor in Osteology and Demonstrator of Anatomy in the University of Michigan. With 314 illustrations. With an introduction by J. Playfair McMurrich, A. M., Ph. D., Professor of Anatomy, University of Michigan, Ann Arbor. P. Blakiston's Son & Co., Philadelphia, 1906.

Diseases of the Nervous System Resulting from Accident and Injury.—By Pearce Bailey, A. M., M. D., Clinical Lecturer in Neurology, Columbia University, New York, etc. D. Appleton and Company, New York and London, 1906.

Transactions of the National Association of United States Pension Examining Surgeons.—Vol. III, 1905.

Around the World via India.—A medical tour. By Nicholas Senn, M. D., Ph. D., LL. D., C. M., Professor of Surgery, University of Chicago; Professor and Head of the Surgical Department, Rush Medical College, etc. American Medical Association Press, 1905.

A Handbook of Climatic Treatment Including Balneology.—By William R. Huggard, M. A., M. D., F. R. C. P., London, H. B. M. Consul at Davos, Switzerland. Macmillan Company, New York and London, 1906. Price, $4.00.

The Science and Art of Prescribing.—By E. H. Colbeck, B. A., M. D. (Cantab.), F. R. C. P. (London). D. P. H. (Cantab.), Physician to Outpatients at the City of London Hospital for Diseases of the Chest, etc., and Arnold Chaplin, B.A., M. D. (Cantab.), F.R.C.P. (London). Second edition revised and enlarged. Henry Kimpton, London, 1906. Price, $1.00.

Chemistry of the Proteids.—By Gustav Mann, M. D. (Edin.), B. Sc. (Oxon.), University Demonstrator of Physiology, Oxford. The Macmillan Company, New York, 1906. Price, $3.25.

The Subconscious.—By Joseph Jastrow, Professor of Psychology in the University of Wisconsin. Houghton, Mifflin and Company, Boston and New York, 1906. Price, $2.50 net.

Transactions of the College of Physicians of Philadelphia.—Third Series, Vol. XXVII. Printed for the College, 1905.

Transactions of the Eleventh Annual Meeting of the American Laryngological, Rhinological, and Otological Society held in Boston, Mass., June 5–7, 1905.

Manual of Diseases of the Ear, Nose, and Throat.—By John Johnson Kyle, B. S., M. B., Clinical Professor of Otology, Rhinology, and Laryngology in the Medical College of Indiana, Department of Medicine of Purdue University, etc. With 160 illustrations. P. Blakiston's Son and Co., Philadelphia, 1906.

Elementary Exercises in Physiology.—By Pierre A. Fish, D. Sc., D. V. M., Professor of Veterinary Physiology and Pharmacology New York State Veterinary College, Cornell University. Second edition, revised and enlarged. Taylor and Carpenter, Ithaca, N. Y., 1906.

Nineteenth Annual Report of the State Board of Health of Ohio for the year ended December 31, 1904.

Case Teaching in Medicine.—A series of graduated exercises in the differential diagnosis, prognosis, and treatment in actual cases of disease. By Richard C. Cabot, M. D., Instructor in Medicine in the Harvard Medical School and Physician to Out patients at the Massachusetts General Hospital. D. C. Heath & Co., Boston, 1906.

The Practical Medicine Series.—Comprising ten volumes on the year's progress in medicine and surgery. Under the general editorial charge of Gustavus P. Head, M. D., Professor of Laryngology and Rhinology, Chicago Post-Graduate Medical School. **General Medicine,** Vol. I.—Edited by Frank Billings, M. S., M. D., Head of the Medical Department and Dean of the Faculty, Rush Medical College, Chicago, and J. H. Salisbury, A. M., M. D., Professor of Medicine, Chicago Clinical School. **General Surgery,** Vol. II.—Edited by John B. Murphy, A. M., M. D., LL. D., Professor of Surgery in Rush Medical College, Chicago. **The Eye, Ear, Nose and Throat,** Vol. III.—Edited by Casey A. Wood, C. M., M. D., D. C. L., Albert H. Andrews, M. D., Gustavus P. Head. Series 1906. The Year Book Publishers, Chicago.

On Carbohydrate Metabolism.—With an appendix on the assimilation of carbohydrate into proteid and fat followed by the fundamental principles, and the treatment of diabetes dialectically discussed. By F. W. Pavy, M. D., LL. D., F. R. S., Honorary Physician to King Edward VII Hospital, etc. P. Blakiston's Son & Co., 1906. Price, $2.40.

The Dynamics of Living Matter.—By Jacques Loeb, Professor of Physiology in the University of California. The Columbia University Press, New York, 1906. Price, $3.00.

Infection, Immunity, and Serum Therapy.—In relation to the infectious diseases which attack man; with considerations of the allied subjects of agglutination precipitation, hemolysis, etc. By H. T. Ricketts, M. D., Instructor in Pathology, University of Chicago. American Medical Association Press, Chicago, 1906.

National Association for the Study and Prevention of Tuberculosis.—First annual meeting, Washington, D. C.

Black's Medical Dictionary.—Edited by John D. Comrie, M. A., B. Sc., M. B., M. R. C. P., Edin. With over 350 illustrations in the text. The Macmillan Company, New York, 1906. Price, $2.50.

Neurotic Disorders of Childhood.—By B. K. Rachford, M. D., Professor of Diseases of Children, Medical College of Ohio, University of Cincinnati, etc. E. B. Treat & Company, New York, 1905.

Bulletin of Iowa Institutions.—Vol. VII. J. H. Welch Printing Co., Des Moines, 1905.

Nursing: Its Principles and Practice.—By Isabel Hampton Robb. Late Superintendent of Nurses and Principal of the Training-school for Nurses, Johns Hopkins Hospital, Baltimore, Md. Third edition, revised and enlarged, illustrated. E. C. Koeckert, Cleveland, Ohio, 1906.

Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the fiscal year 1905. Government Printing Office, Washington, D. C., 1906.

American Medicine

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Public interest in the drug question has been aroused by the present warfare against the nostrum evil, but the comments of the lay press leave considerable doubt as to whether this interest is working for good or evil to the cause of scientific therapy. When laymen heard that 44 percent of Boston prescriptions call for patent medicines the composition of which is unknown to the doctor, they immediately jumped to the conclusion that a sick man might just as well trust to the advertisements as to the doctor, and save the latter's fee. Of course it is difficult to convince them that no sick man can diagnose his own case, as judgment is warped by every illness, but we can reach those needing help if they are convinced that we know what we are prescribing and that we prescribe for a definite purpose. The accusation made at one of the recent Boston meetings, that we are often densely ignorant of what we advise our patients to take, is a most serious charge. If true, there is need of considerable house-cleaning in our medical store-house.

The paucity of specifics is not a blot upon medicine, but it should be widely advertised as a desirable fact for laymen to know. Oliver Wendell Holmes said that if we would keep five or six drugs and cast the rest into the ocean, "it would be better for mankind—but bad for the fishes." Since he spoke we have learned of a half dozen or so more, and have succeeded in making some palatable mixtures of others which have proved their usefulness, but the opinion has become fixed in the lay mind that there is a separate drug for each disease and each symptom. The sick demand drugs and will dismiss the physician who does not prescribe them—a human trait about as old as man himself. Is the physician to go with the tide or try to check it? Surely good can come from this side of the present agitation, and if every physician prescribes only that of which he knows the composition, and gives it for its known effect, there can be no blots upon our methods. Let the public be freed of their false opinions, and the self-prescribing nostrum evil will correct itself.

"Our Profession, Right or Wrong!"—There are some who see so vividly the abuses and dangers of organization that they have concluded organization will not prove a blessing. We are not of the number but they must not be shouted or hissed down. Good things do, or may, result from professional organization, but they hardly outnumber the evils, and the game is therefore not held to be worth the candle. With every increased power of the majority, it is said, with all growth in numbers, there comes an increased and detestable averaging of scientific opinion; progress tends to stop, conservatism, the false variety, gets more and more the upper hand, and individualism is ruthlessly trodden down; new opinions and new truths are silenced, scorned, or snuffed out, and dogmatism and even bigotry entrench themselves. That is the law of all organization and of institutionalism itself—

unless watched and fought against! Then the organization becomes either the tool of leaders who never lead, or, in bad cases, of politicians who rule the body for selfish or ambitious ends. The schemer will almost always officer the strong organization, because the honorable man will not seek honors by scheming. He will in time, not even seek to be honored at all. Perhaps the worst abuse of organization is that perversion of sentiment, exhibited by weaklings and toadies, which acts upon the despicable feeling. Our profession, "our sacred profession," right or wrong! The politician makes use of the cry, and all criticism is struck dumb, all criticizable tendencies shielded by an appeal to professional pride. There is a legitimate and justified pride which all physicians may hold and encourage. There is a cowardly pride of weak minds and weaker hearts which puffs itself up with a professional pride which is really a sham pride, and which stupidly murders the genuine.

Physicians as Saloonkeepers and Druggists as Bartenders.—It is a strange result that the patent-medicine or nostrum evil should have been the first cause of our medical and pharmaceutic degradation, but it is still more noteworthy that the prohibition sentiment should be a close second. "Now that the town is dry, we said to drunkards, tipplers, and to occasional drinkers, 'where do you get your whisky?' The answer of all was, 'why, we go to our doctor and get prescriptions.' 'And who fills these prescriptions?' 'The druggists, of course.'" And thus all over the land wherever there is sufficient prohibition sentiment to get the absurd and useless prohibition laws passed, the druggists are forced to become bartenders. When they are not selling soda-water, or nostrums, they are filling the doctors' "prescriptions" for whisky, etc. The rivalries of business, at least in all smaller cities and villages, compel them to this common degradation. But do all the doctors thus become indirectly saloonkeepers? Those physicians who may try to hold out against the infamy naturally soon find that they are not patronized by the drinkers and their families. The whisky prescription is a bribe to compel consultation, and even then, the worst doctor bribes the most successfully. And the drinkers are the majority despite the majority of votes for "A Dry Town." So one after another fall in with the degrading custom. Nobody, at least, is deprived of his tipple. The more honorable of the physicians, the more that hold out against the prescription business, the more common the punishment. The prohibitionists pretend to ignore, but the facts are evident. Their motive was good; if it could be carried out good instead of evil might result. High license is the only practical method of reform.

The Professor's New Advertising Scheme.—In a city of the Middle West a new device for getting into the newspapers was recently practised with such success that it has been extensively copied in other parts of the country. Whenever the great professor's great medical college, and himself, and his staff, need a bit of "booming," a convenient illness or surgical operation becomes a great "blessing in disguise." The convenient and obliging newspaper reporter is notified, at every stage of the disease (one even sent out daily bulletins signed by himself), the symptoms or the operation are accurately described, progress is telegraphed, etc. The assistants are named, their official positions correctly scheduled, the institution, its greatness, fame, and the rest repeatedly and varyingly set forth. The rival college is hard put to it, and in order not to lose vantage ground some other professor's appendix must be removed. The kodak's help is never scorned, and yellow newspaperdom, doubting or waiting patient, aspiring assistant professors, empty hospital wards, and the yellow medical college—all come to their own! The device is ludicrously crude, but then the whole affair is simply crudeness appealing to crudity, and, so says the enterprising barber, the first and persisting surgeon, *Next!*

Tuberculous patients in poverty must be kept at home, has been the cry from the West for a long time. It is found that they usually travel in search of health when it is too late and they thus become a burden to the community. Unfortunately the advice is still unheeded because climate is somewhat of a fetich with laymen and many a doctor, too. To counteract the harm done to these unfortunates, whose deaths are actually hastened by the privations they suffer while penniless in a land of strangers, there is now evident a most desirable effort to inform the public of the excellent results of properly applied home-management. There is even a tendency to belittle the effects of climate, and this tendency must now be encouraged, because it will eventually show why it is that some changes of climate are so harmful as to be worse than for the patients to remain at home.

The physical type of a tuberculous patient is a vital matter in selecting a climate for him, if he is rich enough to travel and live in the necessary idleness. The medical profession is slowly beginning to realize the importance of the new anthropology, which is investigating the reasons for the differences between the races of man. A good beginning has been made and enough is known to prove that each type has been modified to suit it to the climate in which we find it, and that it is injured by migration to a much different one. This is a zoologic law known for a century, but only now being put to practical therapeutic use among human beings. Unfortunately no observations have been recorded as to the results of climatic treatment in the different types of men, as attention has not been directed to the matter, but we hope that it will now be taken up in earnest.

The blond tuberculous are said to do badly in light climates, though nothing definite is known on the subject. Blondness or brunetness are such evident characteristics, that they offer a very convenient classification for a beginning in these new observations, and it is therefore a suggestion well worthy of investigation. It is true that a race is pigmented in proportion to the intensity of the light in its native land, and if this is a protection against excessive light, it is evident that the blond tuberculous as well as the healthy are injured if they travel to a country of intense sunshine. It is rumored that in such health resorts there is a tendency to more or less brunetness in the survivors, and that although many blonds recover, their mortality rate is decidedly higher than in the northern and more cloudy mountainous climates. One earnestly begs for information on this point, for if these rumors are correct, it is far better to keep the rich as well as the poor at their homes in the dark north and east, than to condemn them to death in a land of perpetual sunshine. It is also rumored that dark brunets show more recoveries in sunny climates than in cloudy ones. We would presume this to be a fact, as the tuberculous negro does badly in the north, but if it is true it needs verification.

An argument against the metric system has been made by H. H. Suplee in *The Engineering Magazine* for May, and it appears to be the consensus of opinion in the engineering world. He shows that the adoption of the metric standard in Germany and France was a simple matter as there were no industries to injure at that time. The vast development at present is wholly prohibitive of any change, for the machinery of the world is based on the inch and foot. He says, by-the-way, that these measures are more practical because more appropriate in size than the centimeter, decimeter and meter. We have called attention before to the fact that the inch and foot were evolved by practical men for practical purposes which cannot be so conveniently served by other measures.

A popular crusade against the metric system now seems likely as it is suited to the scientists and laboratory workers only—a very small part of the nation. This is of much interest to the medical profession, or at least the practising part of it, not the laboratory part, for the grain and ounce also are sizes which have grown up by a gradual evolution because they are just what the practical man wants and in prescribing they are more easily understood by the vast majority of patients. There is, therefore, a growing impression that the metric system is not so well suited to our medical needs as we once thought. This new development of an engineering opposition to any change, being backed by business interests involving billions of dollars, is likely to prevail, so that if we do use the metric system we will be always inconvenienced by having two standards in which to think. It is a matter to which our teachers of pharmacy should give some solid thinking to save the time and nerve strain now caused by thinking in two systems.

The early recovery from wounds caused by modern small-caliber rifles has now been commented upon for ten years, but the far-reaching consequences of this one fact are just about dawning upon us. According to the Army and Navy Register, Dr. Zoge, a surgeon in the Russian army, recently reported to a surgical congress in Berlin, that shell wounds were generally fatal, shrapnel wounds dangerous, but that rifle wounds often, if not generally, healed. Incidentally he mentioned that the wounded could not be treated in the firing zone but had to be removed far in the rear or to hospitals on the lines of communications. Plans to do this are now being strongly urged by our own medical officers in spite of considerable opposition. The old system of well-equipped mobile field hospitals where everything could be done, had to be abandoned. Doctor Schafer, a German military surgeon, stated that the total and proportionate number of fatal injuries was about the same as ever, but from the large number of small bullet wounds inflicted, the percentage of early recoveries was remarkable. In some regiments 70 percent of those wounded at Mukden were again in ranks within three months. This is the startling surgical fact bound to modify future warfare.

Modern firearms are too humane and unless battles are vigorously followed up, the retreating enemy is merely stunned—not disabled. If these wounds had been more severe the Russians would not have been able to restore their ranks. The Japanese, themselves, were always too exhausted after a battle to follow up their advantage and were never able to give a fatal blow. In other words, we are at the ridiculous paradox of possessing weapons so harmless that we cannot disable the enemy. Battles in spite of their frightful loss of life—no greater though than previously—are becoming gigantic French duels. The "code" evaporates when it always results fatally. Wars or national duels will also end when they are too deadly and too expensive. Warfare demands a more deadly weapon, for the present tendency is as absurd as arming soldiers with boxing gloves. Already there is a demand to return to the old 45 caliber pistol because the 38 does not wound sufficiently. We may soon expect to hear a demand for a rifle so severe that when an enemy is hit, he is permanently disabled from fighting, at least during that war.

The status of medical officers has been again brought to notice by the results in Manchuria. They were once barbers and mere civilian hirelings, paid to follow the higher officers like valets, but when medicine became scientific they were found to be indispensable and educated skilled gentlemen were selected. It was soon found that civilians in an army are treated with such scant courtesy by commissioned officers, that rank was a positive necessity or the sick soldiers could not be cared for. In armies the value of opinions depend wholly upon the rank of the man. What Tommy 'Atkins says is ignored, but the Colonel is listened to even if he is a fool. Then sanitation became a science and it was reluctantly discovered that the medical man did infinitely more good in preventing illness that he did in curing what was preventable. He became an essential part of the military machine, to keep it in fighting condition. Nevertheless he is still considered a noncombatant, a fact which medical officers of spirit are beginning to resent as insulting. They are in the most dangerous places, they have a higher percentage of killed and wounded than any other staff department, they are now devising means whereby campaigns may be made in situations formerly invariably fatal, and yet are noncombatants, while a civilian lawyer appointed a judge-advocate—who never hears a bullet or smells blood, is a combatant in the eyes of the law. Could absurdity be carried further? Such things make us seem a nation of mental inverts—reasoning in an upside down fashion.

The Geneva convention is responsible for present conditions. It was devised and adopted before sanitation was a fact, and it is based upon the theory that a doctor has nothing to do with military efficiency but is wholly occupied in relieving the sufferings of soldiers who are so injured that they cannot fight any more. It presumes that the doctor is not a patriot who will do all he can to make his own army efficient. It is based upon a mawkish sentiment of universal brotherhood—very good and noble as an ideal, but wholly out of place in situations where it is a duty to one's native land, to disable its enemies. If a doctor is not a traitor his sole desire should be to do all in his power to help his own army and cripple that of the enemy. That desire will not prevent any one being humane to a helpless prisoner of war, and as an actual fact it is found that civilized combatants are as humane as the noncombatants. A doctor will be just as noble if he is a combatant, too.

The word noncombatant is used with a sting, which implies that a noncombatant doctor on the firing line is not as patriotic or brave as a combatant commissary somewhere in the rear bartering for beef and potatoes. It is a word that should be eliminated from the military organization in which every soul under discipline is a combatant in every sense of the word—doing all in his power to injure the enemy. The medical profession should resent this anomalous and useless law, and every physician should insist that if the nation ever needs him it can have him as a combatant. The status of the medical officer in the national guard or regular army or volunteers will never be restored to its normal, so long as the medical profession is willing to let the Geneva convention imply that doctors are not willing to fight for their country—the only noncombatant part of the nation. A grocer can become a combatant commissary, a railroader become a combatant quartermaster, a clerk become a combatant adjutant, a lawyer a combatant judge-advocate, a civil engineer can become a combatant military engineer, even a clergyman of the religion of Jesus Christ can become a combatant, but a doctor cannot legally be considered a combatant for his wife, children, fireside, and native land, unless he deserts his chosen profession. No staff officer is required to know so much about military affairs as the surgeon, and yet, by law he is still classed with the paymasters who cannot exercise command, as they are men having no military duties beside paying out money, and who are not selected by any professional examination.

The present military system is evidently an anachronism—an inheritance from a past age when surgeons were barbers. From a civilian's standpoint we will see that any system which interferes with the efficiency of any part of the army must be a vicious one, and that no physician can serve his country properly if he is so treated. We hope there will be a change. The law states that no matter how able a surgeon may be, he is not as competent to command a few soldiers as a boy lieutenant just loosened from apron strings but legally a "combatant." As we understand it, no medical officers in the army desire command of troops, nor do they wish to be considered as "fighters" in the sense of carrying a rifle and bayonet, but they do demand a change from the anomalous position which makes an invidious distinction between them and the staff officers who are not required to know as much of military science, who are never in dangerous places, yet who are legally considered to be combatants in a little higher sphere in the military hierarchy. When the desired change is made, we can expect to hear that a military surgeon's opinions and recommendations cannot be ignored with impunity as at present. Then and then only will medical science be able to prevent such scandalous conditions as existed in our camps in 1898. The army will oppose any change and it must be made in spite of the army. Like every other military form, it must come from outside pressure. If we had more "fighting doctors" we would have fewer dead soldiers, because an experienced doctor's opinion could not be disregarded by a school boy made into a "fighting" second lieutenant and given a position of authority before his brain has grown to its adult size.

The need of a new Geneva convention is the great lesson from these mild bullet wounds. The present international law required the Japanese to send back to the Russian army all the captured Russian surgeons, and the men promptly went to work healing the injured and in three months had the army efficient again. This absurd exaggeration of philanthropy compelled the Japanese to assist their enemy, to prolong the war, and thus to increase deaths and suffering and expense and horrors of all kinds inseparable from war. It defeats its own purpose. Times have changed since 1860 and we need a new Geneva convention which will tend to end wars, not to prolong them, and which will recognize the medical officers as combatants, parts of the fighting machine, yet always humane enough to heal the captured enemy as faithfully as his wounded friend. Above all else, the importance of military sanitation must cause all physicians to insist upon the abolition of the old absurdity of any part of any army being noncombatant. A few medical officers have preached these views for a long time, and the Japanese war has shown that they were right.

Suits against municipalities for diseases due to bad sanitation are now being prosecuted successfully in several places and it is reported that the courts are awarding heavy damages. This is a most desirable outcome of society's criminal neglect of the safety of the citizen. Governments are just what the people make them and the people as a group constitute a corporation as soulless and brutal as any other trust. It can be attacked in only one way—its pocketbook—for it is an immortal, unmoral, selfish organism almost oblivious to appeals to its humanity. It naturally does nothing except what is for its own benefit. It can be brought to sanitary decency by making insanitation expensive.

Typhoid fever in Cincinnati is illustrative. It is reported that the corporation did not provide sufficient good water, and was compelled to pump river water directly into the mains, causing 261 cases of typhoid in the first 12 days of June. The military camps of 1898 were not so bad after all. If these facts are as reported each of these men is legally entitled to heavy damages for illness which the city could have prevented if it had spent the money. If the damages are properly awarded it will cost more than it would to have supplied the grade of water the citizens are entitled to receive. In other words, it is now proved that it is society's duty to prevent preventable disease and it must be fined for neglect of duty. As individuals we are at the mercy of the corporation, our appeals fall on deaf ears, but at last the worm is turning.

Pensions and preventions may now be compared, for this awful annual bill of expense due to preventable camp infections, represents an income from several hundred million dollars. It would have been cheaper to borrow and spend a half billion of dollars on camp sanitation in 1898, and beside we would have saved the lives of these fine specimens of American manhood. Our penny-wise and pound-foolish policy in war time, is nothing short of puerile. It is justifiable to hope that our pensions will be still more enormous, for in no other way can the government be taught that the best preventive methods must be used, no matter what the cost. Then we can expect to see a more wholesome respect for military sanitation. If in 1898 we had had five times the number of skilled military surgeons and had given them sufficient rank and authority to have compelled the adoption of their plans, instead of insolent rejection of them with threats of court-martial for their insubordinate fussiness, the nation would now be a half-billion dollars richer. Let this lesson sink in. Let soldiers demand pensions but let them also sue for damages due to bad sanitation.

One-fourth of a town down with typhoid is the startling report from Green's Cut—a village of 200 souls near Waynesboro, Ga. Seven deaths occurred in the week ending June 16, and the churches are used as hospitals. Some one has blundered, for it is all unnecessary. The facts should be published far and wide, in order that many another village, town or city may know its own fate, if it ignores common sense rules of living in modern civilization. Some one has disposed of his bowel discharges in such a way as to kill seven people in one week and perhaps many more. When are we to recognize such conduct as murder? "Am I my brother's keeper?" may have been asked 6,000 years ago, but not now. No longer may we ignore our neighbor's rights.

Coeducation was roundly condemned by President G. Stanley Hall, of Clark University, in his paper recently read before the American Academy of Medicine, in Boston. From his profound studies of adolescence, Dr. Hall is entitled to consideration and his opinions will have great weight in the present tendency to separate the sexes in the public schools after 12 years of age. It is quite likely that the vast majority of the medical profession already agree with Dr. Hall, though from different motives. His opinion is based upon the fact that the life role of men requires a set of mental characteristics, the opposite of those of women, and that to modify either sex by training it in the atmosphere of the other, is to unfit it for its struggle for existence. A compromise of methods is unsuitable for either. Boys must be trained to greater manliness and girls to greater womanliness, so that each will be able to supplement the other. Coeducation may not produce long haired men and short haired women, but its tendency is in that direction.

New Pennsylvania Hospital.—Oil City is to have a new hospital, with modern equipments, which will be under the direction of the Oil City Medical Society.

BOOK REVIEWS.

A System of Medicine.—Edited by THOMAS CLIFFORD ALLBUTT and HUMPHRY DAVY ROLLESTON. New edition, revised throughout with additions. Vol. I. New York: The Macmillan Company, 1905.

We are glad to see appear a revised edition of this system, which is one of the best, if not *the* best, of the systems of medicine ever published. The association with Dr. Allbutt of Dr. Rolleston as editor is a second guarantee, if any were needed, of the care to be exercised in the preparation of the new edition. Volume I corresponds quite closely with the first volume of the earlier edition, although both additions and deletions are to be noted. It contains 1209 pages as compared with 978 in the old, but the use of thinner and better paper makes it less bulky than the latter, a point worthy of commendation in these days of ponderous books. The illustrations number 82 instead of 33, the plates 10 instead of one. The introduction is replaced by an admirable 44 page History of Medicine by Drs. Allbutt and Payne. The other new articles are on Old Age, by the Drs. Weber; Röntgen-rays in Medicine, by Dr. Francis H. Williams, of Boston; and Physical Exercises, by Mr. E. M. Corner. The Clinical Examination of the Blood and its Significance is moved up from Vol. V. Of the topics omitted that were found in the old Vol. I may be mentioned Sunstroke, General Pathology of Infections, Plague, Asiatic Cholera and Puerperal Septic Diseases. Most of the articles are by the same writers that prepared the older articles, the principal exceptions being in the case of the four who have died since the earlier edition appeared. The typography of the book is almost perfect. There is disarrangement of plates VI and VII in the text, they are named wrongly in the list of illustrations, and the references in Dr. Mott's article to plate V are evidently intended for plate VI. As a whole we have only praise for the new book and the thanks of the profession are due Dr. Allbutt for beginning a revision before the first edition is really out of date. A point on which we do not agree with the editors is that it is best to bring out but one volume a year, as they announce will be done, the second volume being expected late in 1906. At this rate the first volume will be in need of revision before the last appears. We sincerely hope this plan will be changed to the issuance of at least two volumes yearly.

Physical Diagnosis, Including Diseases of the Thoracic and Abdominal Organs.—By EGBERT LEFEVRE, M. D. Second edition, thoroughly revised and enlarged. Lea Brothers and Co., Philadelphia and New York, 1905.

The second edition of this work is enlarged and brought to date but follows the same general plan as the first. The illustrations have been increased and improved and new methods added. The book is now well fitted to maintain its popularity as a clear and instructive student's guide to the various phases of physical diagnosis.

A Manual and Atlas of Orthopedic Surgery.—By James K. Young, M. D. P. Blakiston's Son & Co., Philadelphia.

The author covers the field of orthopedic surgery by considering it under two headings, general and special. He gives a very interesting chapter on the history of this line of work, showing the marked contrast between the methods and appliances of the ancients and the surgeons of the present day. The body of the work is less of a text-book than the former work of Dr. Young and it can rightfully lay claim to its title. The illustrations are numerous, beautifully executed, well-chosen and render the subject matter clear and distinct. The chapter on tenotomy is deserving of special attention because of its clearness and conciseness. The illustrations, too, are in accord with the text and together, they render the subject most interesting and clear. The description of the Lorenz bloodless operation for the reposition of the congenitally misplaced hip is not quite in accord with his present teaching and method in that he does not employ *preliminary traction* to bring the head down but proceeds with the attempt at reduction at once. He formerly advocated and employed *preliminary traction* but because of the increased atrophy which it induced he abandoned it. The work is handsomely set and perusal of it impresses one with the magnitude of the task in its preparation, and though not quite reaching the mark set for it by the author, it is a valuable addition to orthopedic literature.

Man and His Poisons.—By Albert Abrams, A. M., M. D. Illustrated. New York: E. B. Treat and Company, 1906.

Abrams furnishes a brief and practical consideration of the causes, symptoms and treatment of self-poisoning. The ten chapters of the book are devoted to various phases of these topics, special emphasis being placed on the relation of the mind to the body. The dependence of nervous and mental diseases upon poisoning from the alimentary canal are often not demonstrable but the results of treatment directed to this source are convincing. The sinusoidal current as a means of treatment is fully considered. An appendix is devoted to the reflexes which the author has at various times well described. The book is a worthy addition to the literature on the subject.

Nursing: Its Principles and Practice for Hospitals and Private Use.—By Isabel Hampton Robb. Cleveland: E. C. Koeckert, 1906.

This book has reached the third edition and appears as a revised and enlarged volume of 550 pages. The principal change is in the first part in which is outlined a three-year course instead of the two-year as formerly. Rearrangements of additions increase the value of the book.

CORRESPONDENCE.

REMARKABLE DOSAGE.[1]

BY

WM. GERRY MORGAN, M. D.,

of Washington, D. C.

To the Editor of American Medicine:—On April 12, 1906, a lady, *en route* from the South to New England, stopped over in Washington on account of a feeling of extreme exhaustion. On the following morning, she presented at a nearby drugstore the following prescription: "Wyeth's acetanilid compound powder 200 gm. (6 oz.). Take one teaspoonful before meals. Dr....................."

The druggist refused to refill the prescription, saying that the dose was poisonous, and advised her to call upon me. The lady was at first very indignant, saying that her physician had given it to her on January 29, and that she had been taking it three times a day ever since. The druggist convinced her of the truth of his assertion and she came to me. Upon examination the following conditions were observed: Cyanosis was extreme over the entire body, the extremities being no more so than the upper part of the body. Pulse was 120, small, regular. Heart sounds less vigorous, but otherwise normal. Vessels apparently normal. Respirations 24; lungs normal. Abdominal contents apparently normal. Bloodpressure 140 mm.; hemoglobin 82; red corpuscles, 5,005,000; leukocytes, 12,600. Urine was absolutely normal, except for a large number of uric-acid crystals.

The gastric juice showed free hydrochloric acid present, total acidity 40. Rennet and pepsin active. No mucus, blood, pus, or lactic acid. Feces were normal.

From the foregoing it may be judged that this lady received very little actual harm from taking 3.08 gm. (47½ gr.) of pure acetanilid three times daily, upon an empty stomach, or a total of 8.55 gm. (132½ gr.) in each 24 hours for a period of nearly two months.

"MOUNTAIN WINDS" IN THE HEALING OF WOUNDS.

BY

ALBERT S. ASHMEAD, M. D.,

of New York, N. Y.

To the Editor of American Medicine:—In your issue of September 9, 1905, Dr. J. M. Taylor, of Boise, Idaho, reports his experience with wounds in his section of the country, stating that they seem to heal more quickly without than with dressings, and that he believes that not only sunlight but also fresh air promote healing. I have noted the same thing about "mountain winds," as they blew three or four days from the Northwest in Kansas. These winds were cold and after blowing from the Northwest would veer around, and the "same winds" would come back from Texas. When blowing "from Texas" the winds appeared colder than when blowing from the Northwest. In this region there was no need for antiseptic dressings for wounds. The pure cold air would heal them.

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[1] Reported to the Clinico-Pathological Society April 17, 1906.

In my experience in regard to tetanus, and what Kitasato has to say of "diffuse daylight diminishing the intensity of the poison" and "direct sunlight robbing it of its poisonous properties in from 15 to 18 hours," does not apply to Japan nor in my opinion to any other region. Sunlight is not even an element in the cure of tuberculosis according to my experience. For on cloudy days and from nighttime exposure of patients, my clinical observations compared with the meteorology of Lake Pocono Weather Station, show better results than on sunshiny days and daytime exposure. It is the air exposure and not sunlight that increases the microbicidal power of bloodserum.

A tetanus bacillus is anaerobic, and can live in sunshine thrown across a vacuum. Sunshine has nothing to do with its destruction but air has.

Nicolaier showed that the earth dressings used by the lower class of people and also the cotton dressings of the more intelligent, or surgical reunion of suspected tetanic wounds were painful, as they shut up the bacilli in the wound, thereby giving the best conditions for development, as it is anaerobic. Even secondary reunion of such wounds was depreciated.

There is a property of bloodserum in one species of animal which destroys the red corpuscles of an animal of another species. This we may call its globucidal power. It is quite distinct from the microbicidal power. It has been shown that the heat of the sun would destroy the globucidal power of the bloodserum. Garlic also destroys it. It has been demonstrated that the remarkable *microbicidal* property of blood vanishes, under the influence of the physicochemical action of sunlight. Therefore sunlight would allow of increased activity of the bacillus of Nicolaier. The healing effect noted by Dr. Taylor in Idaho is due to *absence of germs* in the air.

Why does not exposure to sunlight on the sidewalks of our cities destroy the tubercle bacillus in sputum? The sputum is exposed to the sunlight, until it dries into dust, and then blows into the mouths of people, and infects them. At least this is what the tuberculosis authorities ask us to believe. I for one deem it nonsense. Sunlight has nothing to do in my opinion, with the cure of tuberculosis; the good effects are due to pure and cold air, the colder the better. Heat and sunshine are not curative.

THE ORIGIN OF SYPHILIS. TERTIARY SYPHILIS, SO-CALLED, NOT SYPHILIS.

BY

WILLIS P. KING, M.D.,

of Kansas City, Mo.

To the Editor of American Medicine:—It is remarkably strange that, after all the evidence to the contrary, physicians will continue to speak of those manifestations which follow the eruptive stage of svphilis, as the "*third* stage," or as "tertiary syphilis."

I do not know what the consensus of opinion is among those having opportunity to know better in regard to this matter, but, for myself, I am constrained to say, without fear of successful contradiction, that the skin and other manifestations usually called "tertiary syphilis" are not syphilitic in character, but simply represent the injury inflicted on the capillary arteries by the syphilitic virus before it left the system.

During the existence of the primary lesion and the eruptive stage that follows it, the victim suffers greatly. There are osteoscopic pains, pains in the shins and in different parts of the body. The patient is "all out of sorts," his appetite is capricious, he is feverish at times, and he is apprehensive. He knows that there is something serious the matter with him. But, this is not so in the so-called tertiary stage. It is true that conditions sometimes arise in which the patient may suffer; but, as a rule, he does not.

If a man impregnates his wife during the existence of the primary lesion or the following eruptive stage, whether she acquires a chancre or not, she will have syphilis and the child will also. But, if he should be suffering from the so-called tertiary lesions, neither she nor the child will contract the disease. Now, if syphilis is communicated to both mother and child when the patient is suffering from the primary lesion, or from the "secondary" eruption, why does he not communicate it to them when he is suffering from the so-called "tertiary" lesions? The answer is because in this stage he is not suffering from syphilis; the syphilitic virus having left his system at the disappearance of the secondary lesions.

Further, if mercury is applicable during the existence of the first two stages why is it not applicable in the so-called "third stage?" If still there, it is the same poison, and mercury should act in this stage as well as in the first. But, no, we give an entirely different remedy—potassium iodid. Do we give this believing it will antagonize or destroy the special poison, as mercury does in the first two stages? Not at all. We give it because it is, or has been, heretofore, one of the best arterial capillary dilators and builders. The syphilitic virus has destroyed the finer ultimate capillaries, and by reason of this destruction the many lesions appear. Potassium iodid not only dilates the ultimate capillaries, but it extends them to points and areas needing pure blood.

If we concede that potassium iodid acts as a capillary dilator, and extends those capillaries into the skin and other tissues which have suffered for lack of nourishment, as a consequence of the destructive influence of the syphilitic virus, during the "secondary" stage, then it must be admitted that it works the same baneful influence upon the terminal capillaries in the liver, the cord, brain and other parts, where we afterward have so-called syphilitic gummas. These gummas are, no doubt, the result of deposits and changes in the tissues of the part, because of the fact that the ultimate capillaries were destroyed, or so diseased that the morbid process resulted in the destruction of the lumen of these little vessels, and, thus the parts supplied by these capillaries were robbed of their pabulum, and hence the morbid process resulting in gummas.

There is another matter in this connection of which I wish to speak: I have always held that all of the contagious or infectious diseases originate *de novo* and I am quite prepared to believe this to be true in regard to some cases of syphilis, and further am well prepared to prove it to be true. The following brief history will serve as an illustration:

On April 24, 1897, I wounded my left thumb, with a surgical needle, while performing an operation for laceration of the cervix uteri. The wound was quite deep, but bled very little. The next day I cureted a cancerous rectum, in a man upon whom I had performed an inguinal colotomy 15 months before. This curetment was done solely for the purpose of permitting the rectum to be packed with gauze, to absorb the discharge. On the same afternoon I cureted a cancerous uterus. Mr. Lawson Lait had amputated the cervix in this patient for the beginning of cancer, two years before. I performed the curetment on account of hemorrhage—simply cureting off what remained of the cervix and scraping out the cancerous material from the cavity and packing. When trouble appeared my assistant remembered that I had complained of smarting in the needle wound of my thumb, although I had forgotten it.

Ten days later there was an oblong, indurated, sensitive elevation at the point of the needle wound, 20 days afterward there was an open sore at this point, and, six weeks later, I was confined to my bed, with all the lymphatics in the axillas, the neck, and groins infiltrated. I suffered greatly from pain in all the joints and bones of my body. About 10 weeks after I cureted the cancer, there appeared upon my body, from crown to feet, an eruption, which was pronounced, by most competent authority, to be a maculopapular syphilid. This eruption and the glandular swellings yielded to daily inunctions of a mercurial ointment. This treatment, by inunction, I kept up, at intervals, for something more than a year, alternating occasionally with tonic treatment, and treatment directed to improving digestion and my general health.

At about the end of the fifteenth month, so-called "tertiary" manifestations appeared, in the form of serpiginous syphilids on the hands, feet, and ankles, or upon those parts farthest from the heart, and where the circulation of the blood was feeblest, and squamous syphilids (syphilitic psoriasis) on the arms, shoulders, back of neck and scalp. I took 0.65 gm. (10 gr.) doses of potassium iodid, three times a day, gradually increasing the dose until I took 7.78 gm. (120 gr.) three times a day, for days and weeks, and yet, I could do no more than check the advance of these, so-called, syphilitic manifestations.

This case was published in the *New York Medical Journal*, Nov. 5, 1898. In my paper I took the ground that, in the putrefactive changes which take place in the degeneration of cancers of mucous membranes, a special poison is evolved which, when introduced into another person, produces the disease we call syphilis. In proof of this I used my own case and the cases of six doctors—one here, one each in Chicago, Detroit, Louisville, Pittsburg and Sedalia, Mo., where I once resided and practised—all of whom had been accidentally poisoned, through an open wound in the hand, while operating upon or treating a cancer of a mucous membrane. All had symptoms similar to the primary lesion and secondary eruption of syphilis, all died except myself and one other—whom I had treated with mercurial inunctions 25 years ago. In addition I reported the case of a young man who came to me about 20 years ago with a primary lesion on the prepuce, exactly like that of the primary lesion of syphilis, but, who claimed to have been intimate with only one woman—with whom he had a sort of offensive and defensive alliance—each agreeing to have no relations with anyone else. This sore had appeared, and, of course, he thought that his widow had broken the compact. She came to me for examination the same afternoon, and, after a careful investigation, I found not the least appearance of syphilis about her person. I did not examine the genitalia, but asked her if she had had a sore or a discharge, and she answered, "I have had no sore, but I have had a discharge ever since my little girl was born—three years ago." I had every reason for believing both of their statements—that neither had had relations with anyone else. Six weeks after this the young man "broke out" from head to feet with maculopapular syphilis. In those days I gave the two years' treatment and before this time had elapsed the woman died from cancer of the uterus. I took no hint from this manifestly significant fact.

I believe the reason why five of the seven patients, whose cases I reported, died, may be found in the fact that two took the classic antisyphilitic treatment and five did not, because they believed as they were suffering from poison obtained from a cancer, the antisyphilitic treatment would be worse than useless. This, I believe, is the cause of so many fatalities in those who have been inoculated from a cancer of a mucous membrane, who afterward have secondary syphilitic eruptions, with the attendant glandular infiltration, fever, headache and severe pains in the bones and joints. The severity of the fever and other symptoms is a measure of the degree of poisoning from which the patient suffers, and, not being counteracted by the only known remedy against such a condition—they die. Those who read my article in the *New York Medical Journal* will remember that I requested all physicians who knew of any such case to report the facts to me. Since then I have received about 75 reports of such cases. In moving they were lost, but I remember that in classifying them, I had 26 reports which I felt were sufficiently authentic to justify their use in all articles of this kind. The purport of such communications was as follows:

"Old Doctor A was attending a woman who had a cancer of the uterus (or some one who had a cancer of the rectum) and, in treating it got some of the discharge on an abrasion on his hand. This became a very bad sore, which would not heal, his lymphatics were enlarged, he had fever, suffered greatly from pains in all parts of his body and, finally, broke out all over and afterward died. Every physician who saw the eruption said that it looked like syphilis; but, the doctor would not take mercury, because, he said, he was poisoned from a cancer, and he did not believe the mercury was the proper remedy."

Of the cases which I decided not to use this is a fair sample:

"When I was studying medicine, my preceptor waited on a doctor in our town (or an adjoining town or the country) who had been poisoned from handling, dressing, or treating a cancer. He broke out all over, and, I remember that my preceptor said it looked like syphilis, but the doctor would not take mercury and he died."

The fact is, they all died except myself and the doctor whom I assisted in treating more than 25 years ago, and we were the only ones who took mercury. I am quite sure that I should have died had I not taken proper treatment, and I believe my friend would have died also had he not taken it.

Many of the medical journals, which made reference to my former paper, said that the facts adduced and the proofs given were at least significant, but they all thought that I had not produced sufficient proof to turn the profession around, facing the other way, so to speak, on a matter of such grave importance, and I thought the point well taken. But now I must say, in all candor and honesty, I believe I have produced sufficient evidence to prove my proposition, and I feel that I can confidently lay down this as a fundamental fact—a law, in syphilis: "*In the degenerative processes in cancers of mucous membranes there is evolved a special poison, an unisolated germ which, when introduced, through the medium of an abrasion, or sore, into the system of another person, produces the disease that we call syphilis.*" I believe that a great many severe cases of syphilis, the origin of which cannot be traced, would be found, if investigated, to have come from a beginning epithelioma of the uterus, in a woman who does not know that she has a malignant disease.

ORIGINAL ARTICLES.

ON THE INFLUENCE OF REST, EXERCISE, AND SLEEP ON GASTRIC DIGESTION.[1]

BY

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The question concerning the influence of rest and exercise upon the digestion of food has at all times attracted much attention; even the older writers have commented upon this subject. According to Hippocrates,[1] "Rest greatly aids digestion" and there is an old latin saying, "after meals stand; or walk a thousand feet,"[2] which the Germans have translated better into "Nach der Malzeit zu stehen oder 1000 Schritt zu gehen." Virdiet[3] states "whosoever indulges in violent exercise after eating is apt to feel badly." The first investigations concerning the effect of rest and exercise upon the digestion were made by Beaumont in his famous experiments on St. Martin; on page 87 in the second edition of his work (1847) we read:

> On the subject of exercise or repose, during the digestion of a meal, there has been some diversity of opinion. It has generally been conceded, however, that a state of repose is most favorable to chymification. It has been said, that during the digestion of aliment the energies of the system were centered on the stomach, and should not be withdrawn to any distant part; that the stomach becomes a center of fluxion, etc. I protest, again, against the use of terms which have no definite meaning. I believe the benefit of science will be better subserved by adhering to facts, and the deductions of experiments, than by the propagation of hypotheses founded on uncertain data. From numerous trials, I am persuaded that moderate exercise conduces considerably to healthy and rapid digestion. The discovery was the result of accident, and contrary to preconceived opinions, I account for it in the following way: Gentle exercise increases the circulation of the system, and the temperature of the stomach. This increase of temperature is generally about 1.5°. Now, if the gastric juice be a solvent, its action is similar to other chemical solvents, and its activity is increased in proportion to the elevation of its temperature. Of the reason, I leave others to judge. The effect is certain. Severe and fatiguing exercise, on the contrary. retards digestion. Two reasons present themselves for this—the debility which follows hard labor, of which the stomach partakes; and the depressed temperature of the system, consequent upon perspiration, and evaporation from the surface.

In 1849, Louis Villain[4] attempted to demonstrate by experiments on animals, that the food is much more thoroughly and quickly digested in the stomach of animals during rest than after exercise. His experiments consisted in giving two dogs at the same time the identical quantity and character of food; while the one animal was forced to run about, the other was allowed to rest quietly. After a certain length of time both animals were killed; the food was found almost in the same condition in the stomach of the animal which had been exercising as it had been before being swallowed, while it was thoroughly digested and had already formed into chyme in the stomach of the resting animal.

Fleischer[5] showed that it makes but little difference whether one is resting or up and about after eating, the food being equally well digested in either case; he found on the other hand that rapid walking retards digestion. Forster,[6] however, did not note any difference in the digestion of food in the stomach during exercise or rest. Cohn[7] utilized dogs in his investigations. These animals were allowed to rest after meals or were subjected to moderate exercise; a walk of two hours. The gastric contents was removed by lavage with the stomach-tube. He concluded that moderate exercise immediately after meals disturbs gastric digestion. Streng[8] also experimented on dogs to determine more fully the effect of rest and exercise upon digestion. He gave as a test-meal 25 grams of carne pura in 300 cc. of warm water; some animals were kept at complete rest, while others were forced to exercise vigorously for three hours. The stomach was emptied of its contents in three hours. His experiments showed no difference either in the motor function or in the secretion of acid in either class of cases. Streng also experimented with three healthy individuals. Test-meals of 200 grams of scraped beef, a slice of bread, a plate of bouillon, three spoonfuls of mashed potatoes were given and the contents of the stomach was removed in three hours. Those experimented upon were required either to sit quietly or to move about. His results showed no special difference in any case; so that according to Streng's views the gastric digestion is neither affected by rest nor by exercise.

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[1] Read at the Annual Meeting of the American Gastroenterological Association, Boston, June 4. 1906.

Salvioli[9] went more elaborately into this question, experimenting on dogs with gastric fistulas. He observed that exercise materially diminishes the quantity of gastric juice secreted; for instance in a resting dog 20 cc. to 30 cc. of gastric juice was obtained in 15 minutes; while in a dog fatigued by exercise only a few drops or at most 5–10 cc. were obtained in the same period of time. He also found that exercise markedly diminished the digestive power of the gastric secretion; for instance, if an equal quantity of egg albumen be placed into the stomach of two dogs through a fistula, and the one dog be allowed to rest and the other to exercise, the albumen in the stomach of the resting dog was digested in three hours, while in the animal which had been exercising large quantities of undigested albumen were found remaining. The difference in digestive power is shown even more clearly when digesting albumen artificially in an incubator at 37° C. The quantity of egg albumen which is digested in six hours by a normal gastric juice, that is from an animal at rest, is not digested in more than ten hours in the gastric secretion from a dog which has been exercising. Moderate exercise does not diminish the gastric secretion, while excessive exercise markedly retards this process. Salvioli also observed that the propulsive force of the stomach was more greatly accelerated in these animals undergoing violent exercise than in those at rest.

Spirig[10] found after performing a number of experiments upon himself and another normal individual that the acidity of the gastric secretion is greater when resting than after performing physical exercise; while the propulsive force of the stomach is accelerated by physical exercise. He therefore advises patients suffering with hyperacidity to exercise moderately after meals.

Schüle[11] investigated more particularly the effect of sleep upon the digestive functions. He gave his patients, who had normal digestive powers, 150 grams of beefsteak, 100 grams of potato purée and 250 cc. of white wine; the stomach was emptied of its contents in four hours. Under normal conditions his patients showed a total gastric acidity of 66 to 90; free HCl, 0.15 to 0.24; after sleeping, the total acidity would range between 120 and 130, while the free hydrochloric acid would rise from 0.29 to 0.31, showing that sleep has a tendency to induce a superacidity. This condition was not produced merely by resting in bed, for the same patients would not show a superacidity under these conditions. Schüle believes that the superacidity, which is observed after sleeping is induced by a lessened gastric motility, the food contents remaining in the stomach stimulating the flow of acid; for he also found that those patients in whom the stomach would ordinarily empty itself entirely of its food contents in six hours, would still contain considerable remains of food in the stomach if required to sleep the same length of time. From his observations, Schüle considers it best for patients suffering with hyperchlorhydria not to sleep after meals, while those suffering with dilation should rest after eating.

The results obtained by the various observers concerning this subject have been so conflicting, that it occurred to me that this question required further investigation. For this reason certain individuals, two with normal digestive powers and eight suffering with various gastric disturbances, were subjected to the following experiments. They were given a test-dinner consisting of 40 cc. of soup, 200 gm. of beefsteak, 50 gm. of wheat bread and 200 cc. of water; the tests were removed after four hours. The stomach was as completely emptied as possible and then washed with a definite quantity of water and in this way the total amount of contents remaining in the stomach four hours after a test-dinner could easily be ascertained, from which a fairly clear conception of the motor activity could be obtained. The gastric content was then examined for the total acidity and the percentage of free acid. The individuals were examined after resting, after moderate exercise, that is after walking about leisurely, after excessive exercise during a greater part of the time, and finally after sleeping. In order to ensure sound sleep 5 gr. of trional was added to the test-meal in the special experiments; only, however, after ascertaining that this drug had no appreciable effect either on the motor or secretory function of the stomach.

Normal Cases.—There were two normal individuals subjected to our experiments.

Normal Case I.—Patient, H.F.

Experiment No. 1: Rest after meals. Quantity of contents removed, 50 cc. Total acidity, 55. Percentage of free HCl, 0.111.

Experiment No. 2: Rest after meals. Quantity of contents removed, 44 cc. Total acidity, 58. Percentage of free HCl, 0.120.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 42 cc. Total acidity, 58. Percentage of free HCl, 0.123.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 48 cc. Total acidity, 54. Percentage of free HCl, 0.112.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 88 cc. Total acidity, 50. Percentage of free HCl, 0.111.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 74 cc. Total acidity, 54. Percentage of free HCl, 0.115.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 80 cc. Total acidity, 52. Percentage of free HCl, 0.118.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 84 cc. Total acidity, 55. Percentage of free HCl, 0.116.

Normal Case II.—Patient, H.A.

Experiment No. 1: Rest after meals. Quantity of contents removed, 70. Total acidity, 40. Percentage of free HCl, 0.121.

Experiment No. 2: Rest after meals. Quantity of contents removed, 62 cc. Total acidity, 44. Percentage of free HCl, 0.110.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 74 cc. Total acidity, 52. Percentage of free HCl, 0.120.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 60 cc. Total acidity, 50. Percentage of free HCl, 0.119.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 84 cc. Total acidity, 48. Percentage of free HCl, 0.117.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 90 cc. Total acidity, 46. Percentage of free HCl, 0.123.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 100 cc. Total acidity, 52. Percentage of free HCl, 0.110.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 98 cc. Total acidity, 50. Percentage of free HCl, 0.113.

The results as shown in Cases I and II are practically identical. During rest and moderate exercise neither the secretory nor the motor function of the stomach is in any way affected. The amount of contents removed from the stomach varies between 50 cc. and 74 cc., the total acidity between 40 and 55, the percentage of free acid is about 0.1. After excessive exercise or sleep, the motor function of the stomach was found somewhat impaired, as much as from 68 cc. to 100 cc. of contents having been obtained; the secretory function remained normal; the total acidity ranging between 46 and 55 and the percentage of free acid being about 0.1.

It is evident, therefore, that under normal conditions the secretory as well as the motor functions of the stomach are not interfered with during rest; after violent exercise or during sleep after a meal, however, the secretory function remains normal, but the motor function is slightly disturbed.

Gastric Disturbance.—Two patients suffering with hyperchlorhydria with normal motor function were examined. The results are shown in Cases III and IV.

Case III.—*Hyperchlorhydria with Normal Motility.*—Patient, J. M.

Experiment No. 1: Rest after meals. Quantity of contents removed, 60 cc. Total acidity, 70. Percentage of free HCl, 0.123.

Experiment No. 2: Rest after meals. Quantity of contents removed, 74 cc. Total acidity 74. Percentage of free HCl, 0.134.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 80 cc. Total acidity, 82. Percentage of free HCl, 0.281.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 86 cc. Total acidity, 83. Percentage of free HCl, 0.264.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 92 cc. Total acidity, 82. Percentage of free HCl, 0.256.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 94 cc. Total acidity, 88. Percentage of free HCl, 0.279.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 100 cc. Total acidity, 84. Percentage of free HCl, 0.266.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 96 cc. Total acidity, 88. Percentage of free HCl, 0.287.

Case IV.—*Hyperchlorhydria with Normal Motility.*—Patient, S.L.

Experiment No. 1: Rest after meals. Quantity of contents removed, 56 cc. Total acidity, 71. Percentage of free HCl, 0.110.

Experiment No. 2: Rest after meals. Quantity of contents removed, 60 cc. Total acidity, 68. Percentage of free HCl, 0.135.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 72 cc. Total acidity, 94. Percentage of free HCl, 0.291.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 68 cc. Total acidity, 92. Percentage of free HCl, 0.289.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 95 cc. Total acidity, 88. Percentage of free HCl, 0.288.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 100 cc. Total acidity, 90. Percentage of free HCl, 0.293.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 115 cc. Total acidity, 82. Percentage of free HCl, 0.272.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 104 cc. Total acidity, 85. Percentage of free HCl, 0.261.

While resting the motor function remains normal, from 56 cc. to 74 cc. of contents being obtained; while the total acidity was reduced, ranging between 68 and 74; the free hydrochloric acid being about 0.13 percent. During moderate exercise the motor function remains about normal; 72 cc. to 86 cc. being obtained, while the total acidity remains about the same (82 to 94), the percentage of free hydrochloric acid being from 0.26 to 0.29. During excessive exercise as well as sleep, the motor function is markedly impaired, 92 cc. to 115 cc. being obtained, while the secretory function remains unchanged, the total acidity ranging from 82 to 88, free hydrochloric acid being about 0.25 to 0.29 percent.

It is therefore shown that in cases of hyperchlorhydria with normal motor function, the acidity is reduced, the motor function remaining normal while resting; the acidity remains unaltered, the motor function being normal during moderate exercise; while the acidity is about the same and the motor function is markedly impaired during excessive exercise and during sleep.

In cases of hyperchlorhydria with motor insufficiency the following observations were made upon two patients.

Case V.—*Hyperchlorhydria with Motor Insufficiency.*—Patient, J.S.

Experiment No. 1: Rest after meals. Quantity of contents removed, 110 cc. Total acidity, 72. Percentage of free HCl, 0.213.

Experiment No. 2: Rest after meals. Quantity of contents removed, 115 cc. Total acidity, 74. Percentage of free HCl, 0.224.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 100 cc. Total acidity, 84. Percentage of free HCl, 0.264.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 97 cc. Total acidity, 82. Percentage of free HCl, 0.253.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 130 cc. Total acidity, 85. Percentage of free HCl, 0.295.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 128 cc. Total acidity, 81. Percentage of free HCl, 0.253.

Experiment No. 7: Sleep after meals.

Quantity of contents removed, 125 cc. Total acidity, 89. Percentage of free HCl, 0.274.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 118 cc. Total acidity, 94. Percentage of free HCl, 0.283.

Case VI.—*Hyperchlorhydria with Motor Insufficiency.*—Patient, J.J.

Experiment No. 1: Rest after meals. Quantity of contents removed, 100 cc. Total acidity, 66. Percentage of free HCl, 0.204.

Experiment No. 2: Rest after meals. Quantity of contents removed, 98 cc. Total acidity, 62. Percentage of free HCl, 0.210.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 88 cc. Total acidity, 78. Percentage of free HCl, 0.234.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 90 cc. Total acidity, 80. Percentage of free HCl, 0. 257.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 116 cc. Total acidity, 82. Percentage of free HCl, 0.250.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 118 cc. Total acidity, 88. Percentage of free HCl, 0.261.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 110 cc. Total acidity, 98. Percentage of free HCl, 0.285.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 114. Total acidity, 96. Percentage of free HCl, 0.289.

While resting, the motor function was found impaired, 98 cc. to 115 cc. of contents being obtained, while the total acidity was diminished, varying between 62 and 74, the percentage of free hydrochloric acid being 0.20 to 0.22; during moderate exercise the motor function remains unaltered, 88 cc. to 100 cc. of contents being obtained, while the acidity also remains unchanged, 78 to 84, the percentage of free hydrochloric acid being 0.23 to 0.26. During excessive exercise, the motor function is still further impaired, 116 cc. to 130 cc. of contents being obtained, while the acidity remains about the same. the total acidity varying between 81 and 88; free hydrochloric acid 0.25 percent. During sleep the motor function is also greatly impaired, 114 cc. to 125 cc. of contents being found; while the total acidity is further increased from 89 to 94; free hydrochloric acid, 0.27 percent. to 0.28 percent.

In conditions of hyperchlorhydria with motor insufficiency the acidity is lessened and the motor function impaired during rest; the acidity and motor function remain unaltered during moderate exercise; the acidity remains unchanged while the motor function is still further impaired during excessive exercise; the acidity is still further increased and the motor function is still further impaired during sleep.

The effect of rest, exercise, and sleep was also studied in two cases of gastric catarrh with normal function. The results are shown in Cases VII and VIII:

Case VII.—*Catarrh with Normal Motility.*—Patient, S.J.

Experiment No. 1: Rest after meals. Quantity of contents removed, 64 cc. Total acidity, 24.

Experiment No. 2: Rest after meals. Quantity of contents removed, 62 cc. Total acidity, 28.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 54 cc. Total acidity, 10.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 59 cc. Total acidity, 12.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 92 cc. Total acidity, 11.

Experiment No. 6: Excessive exericise after meals. Quantity of contents removed, 96 cc. Total acidity, 9.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 105 cc. Total acidity, 34.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 115 cc. Total acidity, 36.

Case VIII.—*Catarrh with Normal Motility.*—Patient, H.H.

Experiment No. 1: Rest after meals. Quantity of contents removed, 55 cc. Total acidity, 36.

Experiment No. 2: Rest after meals. Quantity of contents removed, 58 cc. Total acidity, 38.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 62 cc. Total acidity, 20.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 50 cc. Total acidity, 24.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 99 cc. Total acidity, 21.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 104 cc. Total acidity, 24.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 88 cc. Total acidity, 38.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 96 cc. Total acidity, 42.

While resting, the motor function was found to remain normal, from 55 to 64 cc. of contents being obtained; the acidity being increased, the total acidity ranging between 28 and 38; during moderate exercise the motor function remained normal, from 50 cc. to 60 cc. of contents being obtained, the acidity also remained about the same as it was originally, from 10 to 24. During excessive exercise the motor function is markedly impaired, from 92 cc. to 104 cc. of contents being obtained, while the total acidity remains about the same, from 9 to 24. During sleep, the motor function is also markedly impaired, the quantity of contents obtained ranging from 88 to 115, while the total acidity is still further increased 34 to 42.

It is therefore evident that in cases of hypochlorhydria with normal motor activity, the acidity is increased and the motor function remains normal during rest; the acidity remains unaltered while the motor function remains normal during moderate exercise; the acidity remains unchanged while the motor function is markedly impaired during excessive exercise; the acidity is still further increased and the motor function markedly impaired during sleep.

The results obtained from two patients suffering with hypochlorhydria with disturbed motor function, upon whom the effect of rest, exercise and sleep was studied are represented in Cases IX and X.

CASE IX.—*Catarrh with Motor Insufficiency.*—Patient, V.R.

Experiment No. 1: Rest after meals. Quantity of contents removed, 81 cc. Total acidity, 38.

Experiment No. 2: Rest after meals. Quantity of contents removed, 83 cc. Total acidity, 36.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 98 cc. Total acidity, 16.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 105 cc. Total acidity, 20.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 144 cc. Total acidity, 18.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 122 cc. Total acidity, 22.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 135 cc. Total acidity, 15.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 150 cc. Total acidity, 19.

CASE X.—*Catarrh with Motor Insufficiency.*—Patient, W.L.

Experiment No. 1: Rest after meals. Quantity of contents removed, 68 cc. Total acidity, 22.

Experiment No. 2: Rest after meals. Quantity of contents removed, 72 cc. Total acidity, 30.

Experiment No. 3: Moderate exercise after meals. Quantity of contents removed, 110 cc. Total acidity, 12.

Experiment No. 4: Moderate exercise after meals. Quantity of contents removed, 114 cc. Total acidity, 14.

Experiment No. 5: Excessive exercise after meals. Quantity of contents removed, 158 cc. Total acidity, 13.

Experiment No. 6: Excessive exercise after meals. Quantity of contents removed, 134 cc. Total acidity, 14.

Experiment No. 7: Sleep after meals. Quantity of contents removed, 152 cc. Total acidity, 11.

Experiment No. 8: Sleep after meals. Quantity of contents removed, 135 cc. Total acidity, 12.

While resting the motor function is impaired, 68 cc. to 83 cc. of contents being obtained; the acidity is increased, the total acidity ranging from 22 to 36; during moderate exercise the motor function remains unchanged, from 98 cc. to 114 cc. of contents being obtained; the total acidity also remains about the same, 12 to 20; during excessive exercise the motor function is markedly impaired, from 122 cc. to 158 cc.

of contents being obtained, the total acidity ranging between 13 and 22; during sleep the motor function is still further impaired, 135 cc. to 152 cc. of contents being obtained, while the total acidity remains unchanged, 11 to 19. It is evident, therefore, that in cases of hypochlorhydria with disturbed motor function the acidity seems to be increased and the motor function impaired during rest, the acidity and the motor function remaining unchanged during moderate exercise, the acidity remaining unchanged while the motor function is markedly impaired during excessive exercise, the acidity remaining unchanged while the motor function is further impaired during sleep.

From these observations, the following conclusions may be drawn:

1. In persons with normal digestive powers it makes but little difference whether the individuals rest, exercise, or sleep after meals; though after violent exercise or sleep the gastric digestion is very slightly impaired.

2. In patients suffering with superacidity and subacidity it is best to order rest after meals; after violent exercise or during sleep, the digestion is impaired in these cases.

3. In patients suffering with motor disturbances of the stomach, it is best to prescribe moderate exercise after meals, for rest, violent exercise, or sleep disturbs the digestion under these conditions.

LITERATURE.

[1] "Coctioni magis conducere quietem."

[2] "Post caenam stabis vel mille passus deambulabis."

[3] "Eadem causa male digerunt, qui post pastum motibus violentis indulgent." (Johannis Virideti. Tractabus novus medico physicus de prima coctione, praecipueque deventriculo fermento.) Genevae, mdcxci, page 312.

[4] Louis Villain: Rapport de la gymnastique avec Leducation pbysique at movale. These de Paris, 1849.

[5] Fleischer: Ueber die Verdannungsvorgänge in Magen unter Verchiedenen Einflüssen. Berliner klinische Wochenscrift, Feb. 13, 1882, No. 7.

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[11] Schüle: Klinische Beitrag zur Physiologie des Magen. Berliner klinische Wochenschrift, Vol. 32, S. 1089, Dec. 16, 1895.

PERNICIOUS EFFECTS OF ALTERNATING CURRENTS OF HIGH VOLTAGE.[1]

BY
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of Buffalo, N. Y.
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The Niagara Frontier has become the great center of mechanical electrical development, and it is destined to be at the head in this regard for many years to come. Naturally one would expect in this field, pregnant with all the possibilities of electricity, that there would be first observed such phenomena as might result from the presence of such immense quantities of this vital force as are now being procured here, just as one in the mining regions looks for conditions arising from the occupation of mining. This expectation has not been disappointed. We find the phenomena.

In this brief paper I shall present but one phase of the great subject of electricity and its relation to mankind, having reference specifically to its pathologic effect upon the health and lives of men engaged directly in the manufacture, transforming, or transmission of this mysterious fluid. This discovery was suggested by chance, and my subsequent investigations have justified me in the belief that here is a subject which the medical profession will do well to take up and further analyze The röntgen ray was a chance discovery, and so are many of the discoveries which are afterwards taken up by our profession and utilized for the benefit of mankind.

I have spent much time in observing the various manifestations of electricity, and most specially those arising from the alternating, as distinguished from the direct current. And the results have been that I have witnessed in many different ways, some wholly unexpected, the manifestations of this subtle influence, this pernicious influence of the alternating current, especially when of high voltage.

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[1] Some personal observations as to the injurious influence of certain electric currents on physical conditions, and certain foods.

I have made careful investigations in 24 cases of individuals suffering from this influence, during the past few months, and the phenomena observed have been so remarkable, and at the same time so uniform and unvarying that I present the results of my research to the medical profession, in the hope that in a multitude of counsellors there might be found the wisdom necessary to work out the efficient remedy. All of the facts detailed to me have been given voluntarily, and not as the result of questioning, for I was seeking light, and not trying to furnish it; and I am sure that the similarity of the symptoms points to but one conclusion, namely, that continuous employment in the immediate presence of these great electric generators or transformers, where one is continuously in an atmosphere heavily charged with electricity, or ozone, or some light, or ray, as yet undiscovered, results in such disturbed conditions of the digestive fluids or of the secretions of the stomach and its cognate glands and organs as greatly to impair the digestive function; and that persons so employed lose their appetite, and become of an almost chalky complexion, experience pain and distress after partaking of food, and often have to obtain short periods of vacation in order to recover their ability to eat and digest food in a normal manner.

Every one has observed the exhilaration felt, not only by human beings, but by birds and animals, and even by insects, just before an electric storm. Children run and jump and caper on the lawn, or in the fields, and feel almost as though they could fly, young animals frisk and sport about, birds dart through the air, and the insect is specially conspicuous in his tantalizing efforts. But when the storm has at last broke, the lightning flashed, and the air is filled with ozone and other electric fluids, there is a feeling of depression, and everything alive seeks to find some restful position and quiet place. When the storm has passed, normal conditions again return, and the air is said to have been cleared.

This is a common experience. Another common experience is to find, immediately after a thunderstorm, that all the milk in the house has turned sour in an incredibly short time. Here we can plainly see that a chemical force has been at work. What is that force?

I have visited a number of dairies where they use separator machines, and I find that they invariably use the direct current, because souring of the milk does not occur where the direct current is used instead of the alternating current. All up-to-date dairies have the direct current machines, and in one instance I know of a dairyman who at an added expense of several hundred dollars installed a direct current machine, when he had been offered an alternating current at a remarkably low figure. The proprietor told me that he could not use the alternating current because he had found that the milk did not keep so well when they used a separator run by the alternating current, as when it was run by the direct current.

I have many times visited the larger, in fact practically all of the great power houses and transforming plants in the entire Niagara Frontier, notably those in Buffalo, Niagara Falls, Lockport, Niagara Falls, Ont., beside many of the smaller plants; but it is particularly of the large plants I speak, where the manufacture of electricity or its transformation is the sole business.

I recently visited one of the power plants and the man in charge told me that after working for some time in the plant he found that tea and coffee did not agree with him. He drank no intoxicating liquors of any kind. He then tried bringing a bottle of milk with him to drink with his lunch, but the milk always turned sour before noon, although it was perfectly fresh when delivered in the morning. To test this I went to a nearby barn and milked about a quart from an obliging cow, and brought it to the plant, placing it where it would have the direct influence of the waste electricity from one of the large transformers. In less than an hour and a half it was sour, as the direct result of the chemical effect of the high voltage alternating current.

The man himself had been at work there for six months, and he said that when he came to the plant he was hearty, red faced, full blooded and had a good appetite, good digestion, and was a perfectly well man. When I saw him, his face and hands were of an almost chalky whiteness, he had no appetite, and when he ate his lunch, he nearly always felt distress from it in a short time, if he remained in the plant. Whereas, if he went home to lunch and stayed there during the afternoon, he had no distressing feeling. The same was as true of breakfast or dinner as of lunch. If he ate at home and then went to the plant, he would feel the distress just the same as if he had eaten at the plant.

This condition was not due in any degree to a sedentary life, for his work kept him very active, and he got all the exercise a man ought to have to keep well and healthy. Neither was it due to bad ventilation, as in these power plants there is always the very best ventilation; windows and doors are open, and to test the currents of air in one of them I lighted a candle and I found a uniform current of air from the outside inward toward the machines. These power plants are kept scrupulously clean. Drainage, lighting, heating, etc., are perfect. In fact no stove or heating apparatus is ever employed, as the waste energy, in the form of heat, which comes from the machines, is always found sufficient to keep the buildings warm. One might say that a power house is an ideal place in which to work, so far as all conditions of hygiene or sanitation are concerned. But, there is this mysterious force flowing all around, about, above, below, and on every side. Is it ozone? Is it the röntgen ray? Is it the violet ray, or the ultraviolet ray? Or is it some ray or light which science has not yet observed? What is it that throws the digestive apparatus into such disorder? What is it that sours the milk? What is it that produces the chalky complexion?

Case I.—Mr. P., aged 29, married, was employed around a transformer, transforming a current of 23,000 volts, 11,000 volts, and 2,300 volts per year. After having been near this machinery for six or seven months he began to experience abdominal pains, became constipated, lost color, became irritable. He went to several physicians, who, after examining him would prescribe physic, and tell him that there was nothing particularly the matter with him. He found that the only relief he could get from his trouble was to take a vacation. He has been compelled to seek other employment.

Case II.—J. E. B., aged 27, worked around transformers two years, he suffered from indigestion, constipation, and pallor, lack of energy, and irritability, and a desire to go to stool, the results of which are negative, and when he has a passage, they are ill-smelling but normal in color. As soon as he leaves the power plant for a couple of days he feels better.

Case III.—B. W. H., aged 30, married, good habits, has worked around transformers for five years, has been in three different stations. Four months after first going to work, he began to have pains across the abdomen, loss of appetite and extreme pallor. He was frequently obliged to lay off from his work. Physicians were inclined to believe that he was in the incipient stages of tuberculosis.

I have a record of 21 more cases, in all of which the symptoms are similar, therefore I will not take the space to give their details, but I shall be glad to communicate with any of the medical profession who may be interested. These men are all at present able to work, but their work is not a pleasure to them, they are "off their feed," food does not agree with them, they suffer from the symptoms cited, and all, I believe, because of the pernicious effect of the alternating current of high voltage in the influence of which they have to perform their work.

I can add but little. I have stated a problem to the medical profession. What the remedy will be I cannot predict. It may be some sort of a grounding of that wasted fluid that now fills the rooms of the power houses. It may be some neutralizing ray, or some form of insulation which can be devised and applied. It may be one of many things, but which one, none of us is at present able to state. Perhaps this waste energy can be utilized for some form of by-product of electricity, or again, it may be employed for the artificial fermentation of milk or other fluids, or the more rapid aging of liquors.

But the important question is: What does this mean to the men engaged in the business of manufacturing electricity? It means personal discomfort and distress, which alone would make it enough of a problem to engage our most serious attention. It means that these men will be put in substandard lists for purposes of life insurance. It means, possibly, deterioration, more or less permanent, of the individual, of his vital organs, his powers of healthful assimilation of food, which in turn means anemia for the victim himself, and if he becomes the father of children, they will probably suffer the secondary effects of this unnatural condition of the parent.

The problem is of sufficient moment and interest to warrant our profession in giving it further study and investigation. If my paper has the effect of awakening an interest in this problem, it will have served its purpose.

THE INTESTINE SURGICALLY CONSIDERED WITH SPECIAL REFERENCE TO ITS STERILIZATION. A NEW OPEN METHOD FOR LATERAL ANASTOMOSIS.[1]

BY

S. EDWARD SANDERSON, M. D.,
of Detroit, Mich.

If we could eliminate the element of sepsis in all intestinal surgery we would be able to simplify greatly our operative technic and to increase greatly the chances for better local repair, and for more prompt and certain recovery of our patient. In this class of work great care is spent in preparing the hands of the surgeon, in sterilizing the surface of the abdomen of the patient; the peritoneum is freely opened, a loop of the intestine is picked up with impunity because of the sterile condition of its peritoneal covering, the danger of sepsis lying in the lumen of the intestine. Can we not lessen the number of bacteria in this hotbed of infection or even obtain an amicrobic condition of the interior of the intestine? As great danger lies in the food stream, heretofore care has been taken to lessen this danger by lessening the amount of intestinal contents, and by giving some drug to inhibit the bacterial growth. My experience in this direction is detailed in my paper before the General Section.[1]

Comparatively recently work has been done in amebic dysentery to open the bowel surgically and disinfect by irrigation into the lumen of the large intestine. I am unaware that any one has ever attempted a surgical sterilization of the bowel interior at the time of operation except myself. Should we arrive at a practical method of accomplishing this I feel that we will have taken a long step in advance. What are the obstacles in the way: First, have we any drug or solution which can be used for this purpose satisfactorily? Second, have we any practical method of using an antiseptic locally? Third, is the time lost in following this procedure compensated for by the result gained? If we can obtain a sterile condition, time spent thus is well spent, as we have found in other fields where we apply antiseptic methods. Until recently we had no potent antiseptic which could be freely used without danger of injuring intestinal tissues or of injuring the peritoneum. My work with benzoylacetyldioxid (acetozone) taught me that in this drug we had a most potent aid. In the fully hydrolized saturated solution it is equal in strength to mercuric chlorid 1:1000 and is not injurious to the mucous membrane or to the peritoneum. The procedure which I have employed in using it is either to inject the fluid into the lumen of the intestine through a hollow needle or through an incision, freely irrigating the bowel interior.

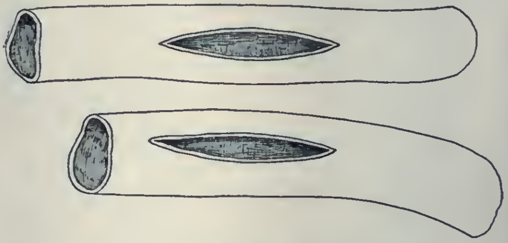
Fig. 1.—Showing oval opening.

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[1] Read before the Surgical Section of the Michigan State Medical Society at its annual meeting, held at Petosky, June 28, 29, 30, 1905.

[1] Published by Jour. Mich. State Medical Society, Dec., 1905, *q. v.*

Not having this drug at hand, I would employ normal salt solution, which, if not antiseptic, is at least mechanically cleansing. When the former method is used the bowel contents must be passed along by gentle manipulation, leaving the immediate portion of the bowel empty. When the latter is employed the solution and the bowel contents can be allowed to flow outside the abdominal cavity as we would flush an abscess cavity or any cavity containing septic material. This leaves the bowel empty to such an extent that no fear need be entertained of further soiling from bowel contents passing down from unsterilized portions of the intestine. This allows us to discard the use of clamps. In over 50 experimental operations I have never found it necessary to employ clamps and have never had my work interfered with by outflowing intestinal contents.

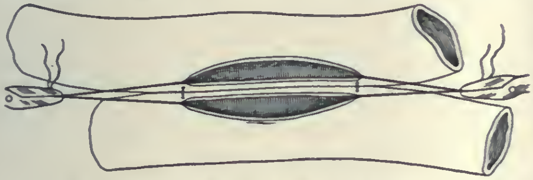

Fig. 2.—Showing the two guy sutures.

Does this procedure produce a sterile mucous membrane? I have endeavored to answer this question practically by a number of experiments on the rabbit and on the dog. In my paper before the General Section, already referred to, I call attention to the fact that my observations in that series of experiments lead me to believe that the great bulk of bacteria present in the intestine is to be found in the bowel contents. Freely emptying the bowel of its contents and washing the mucous membrane with this antiseptic would theoretically produce a sterile condition. My experiments bear this theory out. In every test I did not arrive at a sterile condition, but in a sufficient number of cases to make me feel sure that it is only a question of being thorough enough in our antiseptic irrigation. This leads me to believe that the same solution used for colonic irrigation and for stomach washing will greatly aid us in conditions in which antiseptic irrigation of these portions is indicated. I might say here that clinically I have used the solution in irrigating the gallbladder, flushing the eye, the urethra, bladder, fresh wounded surfaces I suspected to be contaminated, with happy results.

The series of tests, as stated, were upon the rabbit and upon the dog. In the rabbit the procedure was to flush the appendix through a hollow needle. The outer end was freely opened and cut loose from the bowel, which was closed, leaving the mucous membrane of the treated portion free and open in the abdominal cavity attached to its blood supply. In all cases in which this was done the rabbit withstood the operation well, made a good recovery and lived until finally operated on again or killed. In some of these cases cultures were taken from the mucous membrane at the time of the sterilization. At the later examination of the operative field, either at operation or at autopsy, the only evidence present in any case was a slight localized peritonitis or a collection of mucus forming a mucoid tumor on the everted mucous membrane. Cultures were taken from several of these. My deductions from this series were that the bacteria were either entirely destroyed or the number so reduced that the peritoneum easily took care of them.

The experiments on the dog included the use of the solution as I would use it in operating upon the human intestine. The cultures taken from this series, although not all negative, led to the conclusion that mucous membrane can be sterilized. Of the dogs operated upon for intestinal anastomosis several had been treated with the drug internally. In certain others th

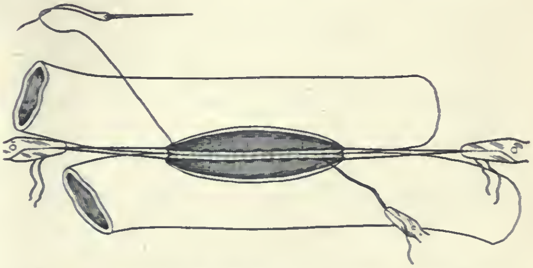

Fig. 3.—Showing the first part of the right-angled, through-and-through suture approximating serous surfaces.

had been omitted. Of the cases observed peritonitis appeared only in the cases untreated.

What bearing does this have upon our operative technic? I would discard all intestinal clamps. I would discard all closed methods of anastomosis.[1]

I. (a) Open, (b) closed.
II. (a) With special device, (b) without special device.
III. (a) With immediate result, (b) with late result.

In my hands the Connell suture for end-to-end anastomosis is thoroughly efficient. My method for lateral anastomosis in some respects copies Connell's method. An opening is freely made into the lumen of the gut at both points where the anastomosis is desired. This opening may be linear or oval (Fig. 1.) and should be large enough to equal, if not exceed, the lumen of the gut. A guy suture of silk or silkworm is passed in to hold the ends of the opening in approximation, two sutures being necessary (Fig. 2). Beginning near one the bowels are sewed together from the mucous membrane side approximating the serous coats. The suture employed is a continuous right angle through-and-through suture, all work being done within the lumen of the intestine (Fig. 3). Reaching the other guy suture, a knot is tied in the running suture and the guy suture is removed. The running suture is continued around to the starting point (Fig. 4), as in the Connell method. The suture material to be used may be silk or catgut. The disadvantage of silk is that it is a permanent suture and remains in the tissues for a great length of time before it finally sloughs out, which I believe may take weeks, months, or years. The difficulty with catgut is that it may absorb before the tissues have become firmly healed. My use of catgut is still in the experimental stage, but I believe the time will come when we will have catgut so prepared that we can rely upon it to last long enough to hold the tissues until nature has produced a firm union.

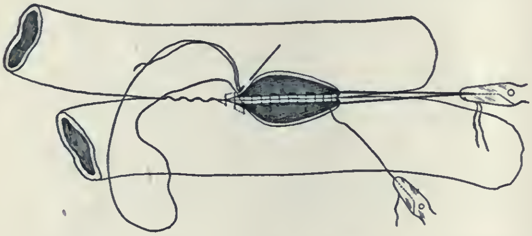

FIG. 4.—Showing running through-and-through suture continued and the manner of continuing.

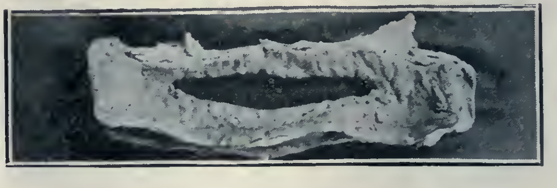

FIG. 5—Lateral intestinal anastomosis Experimental in dog. Author's method. Single right-angled through-and-through suture catgut. Suture absorbed (stitch marks can be seen). Firm and complete union. Specimen shrunk from preservative. At the time of operation it was 6 inches long.

Scarifying of the serous surface to be approximated aids in more solid union. I present some specimens here today, two of which at least were done with catgut. In both cases an opening of several inches (five to eight) was made (Figs. 5 and 6), one line of sutures alone used, no evidence of peritonitis, very few omental adhesions with a good repair were present.

Before doing any intestinal work, what would be my recommended method of procedure? When time permits, first, empty the bowels by catharsis; second, inhibit the food entirely to the lowest practical limit; third, irrigate the colon with this antiseptic solution; fourth, use

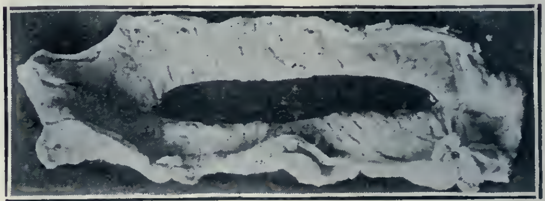

FIG. 6.—Lateral intestinal anastomosis. Experimental in dog. Linear incision, author's method. Single line of right-angled, through-and-through, continuous suture, catgut (Vanhorns' No. 2); ten days. Specimen removed at 14 days, postmortem. No evidence of suture remaining. Firm and complete union (line of union appears in cut). Specimen shrunk from preservative. At time of operation opening was eight inches.

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[1] I formerly classified methods of intestinal anastomosis in a paper read before the Wayne County Medical Society, December 19, 1904, as:

the same drug internally; and fifth, flush the bowel lumen with the full strength solution at the time of operation. If work in the stomach is to be included, flush the stomach also before operation. This preparation should extend from three to five or seven days. To be sure other indications should receive attention, such as preserving the general condition of the patient and other surgical preparations.

When emergency work is called for, time would permit only of the flushing at the time of operation.

TYPHOID FEVER; ROUND WORMS; CHOLECYSTITIS; CHOLANGITIS; HEPATIC ABSCESSES.

BY
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of Seattle, Wash.

Dr. T. Uyematsu furnished the following history of a Japanese man, aged 40, who never had been strong and who was a constant sufferer from chronic dyspepsia. He drank a great deal of liquor, and during the time that he attended law school had several attacks of acute gastrointestinal catarrh. Syphilis is denied. After he arrived in this country he went to work in a sawmill at Leavenworth. After staying there for 20 days he was taken ill. He came to Seattle, suffering, as he said from gastralgia. During all the time he was in this country, (since July, 1905), he had a poor appetite and was nauseated. For three weeks before admission to the hospital he had fever. Dr. Uyematsu says that when he first saw him, he was reduced in flesh, his tongue was thick and coated white, his skin was yellow. He had no fever. His bowels were constipated and he had a very good appetite.

I first saw the patient in consultation with Dr. Uyematsu on the morning of September 22, 1905. At this time he complained of pain immediately over the gallbladder with some tenderness. His temperature was 99.2°. Before he was admitted into the hospital he had a chill and a rise of temperature to 102°. On the morning of September 25, his temperature was 104°, at three o'clock of that morning his temperature had been only 98.8°. On this day he had quite a severe pain which seemed to be over the right hypochondriac region. On account of the higher temperature, the chill, the pain over the region of the gallbladder and the history that he gave of a previous similar attack, the diagnosis of gallbladder infection was made and it was decided to operate upon him on the morning of September 27.

On the morning before the operation he vomited a large lumbricoid worm and was relieved soon afterward of the pain that he had over the right hypochondriac region. The operation was postponed, being now declined by the patient. I noticed, however, in the nurse's report, that on the afternoon before this happened that a portion of a worm had passed with his bowel movements. At seven o'clock on the morning of September 27, his temperature was 99° and during the morning he vomited up another worm and passed with the stool two large worms. In all there were a dozen worms either vomited or passed with stools. During the succeeding day, September 28, his temperature varied from 100° to 102°. On the first day of October a Widal test was made which was negative as was also a diazo test. His temperature gradually went down till on October 9 it was normal. Before morning on October 11, it rose again to 102° and his pulse went up to 144. At this time the following note was made: "Patient has very severe pain in the region of the gallbladder, abdomen, and back." Between four and five o'clock in the afternoon he vomited about five ounces of bright red blood, after which his pulse was very feeble and rapid. During the day an examination of the blood had been made which showed 4,176,000 red blood cells, 5,600 white blood cells and 70 percent hemoglobin.

Between 3 a. m. and 7 a. m. next morning, he vomited at one time five ounces of blood and had four hemorrhages from the bowels. The amount of blood was not estimated. That coming from the bowels was dark red in color, and his temperature at 7.30 p. m. recorded 95.8°. On that day the nurse called my attention to the fact that there was a very decided lump in the right hypochondriac region which had disappeared before my arrival at the hospital. At 11.30 p. m. he had his last hemorrhage from the bowels which was small in quantity.

His pulse during this time remained rapid and feeble. On October 13 at 7.30 in the evening his temperature was 100.6°. When an attempt was made that day to give him a nutritive enema the point of the syringe came away streaked with blood and from that time until October 16 nothing in particular was noticed. On that morning, however, a large lump was again seen at the site of the gallbladder It decreased in size before I saw it but the nurse reported that it had been present the previous day.

His temperature suddenly rose to 104° and it was decided to make a rapid operation on the gallbladder as his condition was such that we did not think he could stand an extensive operation. On the morning of October 18 his pulse was 112, temperature 98.2°. On opening the abdomen a large gallbladder at once presented itself covered thickly with gray lymph to which the omentum was adherent. On being opened, thin pale bile escaped at first, followed by quite an amount of pus. On introduction of the forceps numerous blood clots were removed, dark in color, which had evidently been present for some time and these were followed by bright red blood clots some of which no doubt had formed more recently. Nothing else of any moment was discovered at this time. The condition can be compared to a settling glass with urine containing blood and pus, the clear urine being on top, next a layer of pus, and the bottom blood.

The patient remained in a most precarious condition and finally succumbed on the morning of October 26. During all the previous part of his sickness, after he came to the hospital, his passages were noted as "large fluid stools", "yellow brown in color", "large fluid bowel movement", "very much relaxed bowel movement", "liquid bowel movement", etc.

Subsequently on talking to the nurse it became evident that the movements that he had, at least part of the time, were typical of typhoid.

Autopsy, October 27. The wall of the gallbladder was thickened through the whole substance but thicker near the exit than in the fundus. The mucous membrane was of fairly good color in the fundus but was red and congested in the lower part. Upon the posterior wall just inside the entrance to the duct, was an ulcer oval in shape, about three-quarters of an inch in length and one-half inch in width. Surrounding this was considerable induration. The edges were distinctly raised and irregular. It was dark in color and had adhering to it some small clots of blood

The lower part of the right lobe of the liver contained numerous small abscesses, and a few also existed in the left lobe. There was a suppurative cholangitis throughout these areas and on making a transverse section pus could be squeezed out of the ducts.

The stomach showed irregular areas of congestion.

The duodenum was negative. No intestinal lesions were found except in region of Peyer's patches where there was wellmarked ulceration and sufficient evidence to warrant a diagnosis of typhoid fever. No other intestinal lesions were discovered.[1]

In the light of the history of his case, its course and the postmortem examination, it seems very evident that the condition was one of typhoid fever and the secondary condition was gallbladder infection in all probability typhoidal in origin. The abscesses no doubt were due to the same cause. The hemorrhages that occurred from the stomach were probably secondary to the hemorrhage of the gallbladder, that is, the blood passed from the gallbladder into the duodenum and was carried into the stomach by reversed peristalsis, and thence vomited. As to the hemorrhages from the anus there is little to be said. The condition of the ileum was such as to convince one of the source of the hemorrhage. The source of the vomited blood may not be so conclusive but, when there is such operative evidence of hemorrhage into the gallbladder as in this case, and when we consider that the organ was distended just previous to the hematemesis, and that after a hemorrhage the distention disappeared, the supposition seems warranted that the blood which was vomited came from the gallbladder into the duodenum, and from there returned into the stomach. Since the blood clots were found in the gallbladder at the time of the operation and an ulcer found at necropsy, it cannot be gainsaid that a hemorrhage had occurred directly into the gallbladder. On the other hand, there is no lack of evidence that regurgitation of the intestinal contents may occur from lower down in the intestine. Mr. Schofield in narrating the case of an hysteric woman, states that two ounces of castor-oil, injected into the rectum, would be vomited in ten minutes time. However, I have never read of an instance in typhoid fever in which intestinal blood was vomited. In this case lumbricoids were vomited and according to the history obtained from Dr. Uyematsu, there was a period of five years in which the patient annually vomited worms and during his present sickness, a great many were vomited. In regard to the habitat of the worms in this patient's body, and I may say in passing, that the original diagnosis was cholecystitis, and when the decided improvement occurred after he vomited the first worm, I even considered the possibility of the gallbladder containing worms or of the cystic duct being plugged by a worm.

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[1] During the discussion following the reading of this paper before the King County Medical Society, it was suggested that these ulcers might be tuberculous. One ulcer was more transverse than the others. The edges were decidedly raised and the ulcer punched out going through the mucous membrane, and showed to my mind, a tendency to contraction. No doubt the cicatrizing process had been delayed very materially, for this was fully the eighth week after the onset of the disease. There was no evidence of tuberculosis except that one ulcer was transverse. Personally, I feel confident of the diagnosis of typhoid ulcer.

The proof that this case was typhoid fever is clinical and pathologic, the bacterial evidence being wanting. A Widal test was negative. Cultures were not made. An arterial injection of formalin embalming fluid had existed for 20 hours before the autopsy was made.

The patient's temperature was erratic, due to the presence of the gallbladder infection. He had been ill about three weeks before admission. The temperature drop at the time of the intestinal hemorrhage was characteristic. The postmortem appearances of the intestines were characteristic and on looking back on this case I hardly see why the gallbladder symptoms, after the hemorrhages, could have obtunded our sensibility to the many typhoid manifestations even if the Widal reaction was negative.

Sufficient evidence has been produced of late years on the relation of typhoid fever to gallbladder disease to make it useless to add any references to show that cholecystitis and ulceration of the gallbladder may depend on typhoid bacilli.

Camac concludes that the entrance of germs into the gallbladder occurs practically by two avenues, *i.e.*, by the blood and by the direct passage up the duct, the latter being the most probable.

All forms of cholecystitis may be attended by ulceration. Acute typhoid cholecystitis seems to be prone to be accompanied by ulceration and perforation. Not long ago Dr. Willis contributed a very valuable report of a case with perforation. The ulceration in this present case was accompanied with marked infiltration of the surrounding areas.

Chairi makes the statement that typhoid bacilli may exist in the wall of the gallbladder and reports a case with seven necrotic patches from this cause.

Suppurative cholecystitis from typhoid fever is rare. Gillies reports that of 25 deaths from typhoid fever, in Montreal, one patient only had suppurative cholecystitis. In 2,000 fatal cases tabulated by Holscher, there were five cases with suppurative cholecystitis. In 1,061 cases of typhoid fever in South Africa during the year 1900–1901 there was only one case of suppurative cholecystitis. A gallbladder wall surrounding a suppurative cholecystitis may ulcerate and produce an abscess in the contiguous liver substance. Rolleston says that a suppurative cholecystitis may occur coincidently with a suppurative cholangitis leading to multiple areas of suppuration, but he does not say that this combination depends upon typhoid infection. He also makes the statement that a profuse hemorrhage may occur in the gallbladder from ulceration of the vessels but that it is a very rare condition. I have not seen a report of a case in which it occurred.

Camac[1] has compiled a table embodying 115 cases of gallbladder infection following typhoid fever; in 7 of these cases the gallbladder was simply distended, in 22 there was perforation, in 4 stones were present; in 9 there was cystitis, in 2 ulceration and in the remainder no definite note of pathologic conditions could be made, but in none of the cases was any mention made of liver abscess. It may also be of interest to note that according to the table, 69 patients were treated "with the hope" that their cases would care for themselves and with the result that 64 died, 6 were operated upon and of these 3 died. One was treated by means of counterirritation and the gallbladder could be palpated long in convalescence. Three were tapped and of these two died. The cases reported by Flexner and all but one of Chiari's are bacteriologic studies.

Dr. Keen says of gallbladder cases: "As a rule no surgical treatment can be instituted." In Mason's famous case the patient was simply tapped and made an excellent recovery, 3½ ounces of seropurulent pus being removed. In Dr. Owen's case reported in this issue, the patient had no treatment and made a first class recovery. Dr. Camac reporting Dr. Osler's case says the patient was tapped and this doing no material good, was tapped again a few days later, but the gallbladder was missed and the liver punctured, this being followed by a laparotomy and death.

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[1] Am. J. Med. Sci., Vol. cxxvii, 275.

Keen says that the most probable cause of hepatic abscess following or accompanying typhoid fever is by means of the pyogenic bacteria and especially the colon bacillus. In only a few cases can the cause be attributed to typhoid bacilli. The disease may secondarily depend upon ulceration of Peyer's patches due to an infection of these ulcerated areas by other bacteria.

Rolleston, using the term "solitary" abscess as synonymous with tropical abscess, says Holscher's 2,000 cases show 12 solitary abscesses, and of Keen's 16 cases of solitary liver abscess some had abscesses located elsewhere.

Cassuto, also quoted by Rolleston, reports two solitary liver abscesses following typhoid fever, in one of which bacteriologic examination showed a pure typhoid infection, and in the other a mixed typhoid and staphylococcus infection. He also makes the statement that multiple abscesses of the liver may depend upon typhoid infection, though it is not stated whether it comes through portal vein infection, through direct emigration or through hepatic artery infection. However, I believe it is more probably due to the direct sequence of an acute suppurative cholangitis.

I have endeavored to find a statement relative to liver abscess secondary to and depending upon pus in the gallbladder. Grey says that the lymphatics on the right side of the gallbladder enter the lumbar glands, those on the left pass to the esophageal glands and the glands situated along the lesser curvature of the stomach. Those surrounding the gallbladder accompany the hepatic vessels and open into the glands of the gastrohepatic omentum. If typhoid germs enter a normal gallbladder, the exit of which is obstructed, they should be innocuous, but should they enter a gallbladder the duct of which is obstructed they would produce trouble. The obstruction may depend on stones, on inspissated bile or on any preexisting or autoproduced inflammatory condition. In other words, the typhoid bacilli may produce an inflammation of the duct obstructing the free flow of the bile from the gallbladder and thus giving rise to a cholecystitis.

Brening experimentally shows that pneumococci and colon bacilli injected into a gallbladder that is freely drained cause no trouble but that when any obstruction occurs these bacteria cause trouble. The common duct was tied and in a short time the intestinal bacteria were found in the gallbladder.

Ehret and Stolz experimented on dogs by introducing sterile glass balls, broken on two sides, into the gallbladder. All the animals recovered from the operation. One dog was killed two months later and his gallbladder contained an abundance of bacteria. After three months they were put under unfavorable conditions of diet from which they developed diarrhea and two eventually died of suppurative cholecystitis.

In others absorbent cotton was placed. Two showed, eight to ten weeks later, an abundance of nonvirulent bacilli. Spontaneous development of cholecystitis is caused by diarrhea and when this is present large numbers of colon bacilli are found.

Round worms may be direct producers of jaundice by entering the common bile duct from the duodenum. Mertens has collected 48 cases and Sick, 64 cases. Round worms may carry with them microorganisms which produce cholangitis and may in this manner be the cause of liver abscess. Mertens says the diagnosis depends on finding the ovums in the dejections.

In my case, the patient had a distended and painful gallbladder the day before the operation was appointed for, and during the morning before the operation was abandoned, he vomited one large lumbricoid worm which was followed by others. Just before the first worm was vomited his symptoms began to improve and the distended gallbladder was relieved. Mertens' method of diagnosis was not needed but was tried and showed ovums.

In the light of these observations it hardly seems to be stretching a diagnostic theory to say that one or more of these worms caused an obstruction of the common duct and both mechanically and as carriers of infection from the intestinal tract to the ducts, were responsible for the suppurative cholecystitis, cholangitis, and secondarily for the liver abscesses. Just what effect typhoid fever has on round worms I do not know nor have I found any statement in the textbooks at my command. A good many Japanese whom I have treated for typhoid fever have passed round worms during the course of the disease, nearly all of them coming away alive. It appears to me that these worms may become restless from the secretions in the infected intestines.

I believe the sequence of events in my case to have been:

1. A patient chronically infected with lumbricoid worms. 2. An attack of typhoid fever. 3. One or more worms entered the common duct producing colic, distention of the gallbladder and an infection of the gallducts and gallbladder. 4. Passage of the worm or worms from the common duct into the duodenum followed by a free flow of bile, after which the gallbladder symptoms were relieved. These worms were vomited and passed. 5. A period of improvement during which the patient was allowed to do and eat many things, which should not be allowed a typhoid patient. 6. As a result of typhoid infection of the gallbladder, ulceration occurred in the wall followed by hemorrhage into the gallbladder and distention. In time the contents of the organ were passed into the duodenum and were vomited, being associated with intestinal hemorrhages. 7. Formation of pus in the gallbladder after the second obstruction to the flow of the bile in and out. 8. Death from septicemia incident to the typhoid process, 15 days after the occurrence of the hemorrhages.

The suppurative cholecystitis probably did not occur until after the hemorrhages as on that day a white blood count showed only 5,600.

I hardly know where to locate chronologically the incidence of the hepatic abscesses. I very much regret that I must report so incompletely a case that has so much in it of particular value in the history of typhoid fever, and which, so far as I know, is unique on account of the grouping of features, but the lack of the bacteriologic examinations must necessarily detract from its full value. However, the case teaches that in all acute gallbladder conditions, suppurative or nonsuppurative, typhoid fever should be considered and proper tests made before operating, and that in all chronic gallbladder cases we should inquire as to a history of typhoid fever sometime previously.

THE MASTOID OPERATIONS.

BY
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In a nutshell, the modern mastoid operation consists in the formation of a more or less cone-shaped canal in the mastoid process of the temporal bone, the base of the cone being at the cortex, or outer shell of the mastoid, and its apex at the antrum, the largest and innermost of the mastoid cells. While forming this conical canal, we must take great care to avoid injuring the following structures: Behind, the lateral sinus. Above, the middle lobe of the brain. At the inner end, or apex, of the passage, the facial nerve and the horizontal, otherwise called external, semicircular canal. This is a brief statement of the general nature of the mastoid operation and also of its difficulties and dangers. One must make the cone, but one must, generally speaking, so make it as not to touch the various important, easily-injured surrounding structures. This is like steering between Scylla and Charybdis, except that, for the mariners of old, there were but two points of danger, whereas, for the performer of the modern mastoid operation, there are four.

For what affections is the operation in question performed? For inflammations of the mastoid process, acute, subacute, and chronic; suppurative, and nonsuppurative; simple, tuberculous, syphilitic, traumatic, etc.

Whether the trouble be suppurative or nonsuppurative, simple, tuberculous, syphilitic or traumatic, precisely the same procedure will be employed. According, however, as the affection is acute, subacute or chronic, the kind of operation will vary. Let us, therefore, review, before we attack the operation itself, these three varieties of mastoid inflammation—chronic, subacute, acute.

In the acute form, the pain is generally severe. The process is tender, especially at its tip, and immediately above and behind the attachment of the auricle. At the beginning of the attack, in an adult, there may be no swelling; in a child, however, the swelling is almost always present at the very outset, and it is apt to be rather characteristic—whitish, almost translucent, and with a tendency to displace the auricle forward and outward. One can almost diagnose acute mastoiditis in children by this whitish, semitranslucent puff-ball over the mastoid, with the resultant turning of the pinna forward and outward.

After a time, if the patient does not die, or is not relieved by operation, the case becomes subacute. The pain disappears for hours at a time, the tenderness and swelling, however, remaining. There is seldom high temperature. Often the patient, between his exacerbations, feels well and cheerful. He does not ordinarily appreciate his danger, and, ofttimes, neither does his doctor.

By chronic mastoiditis is designated the condition indicated by either a persistent discharge from the attic (the highest part of the tympanum) or a discharge from a sinus in the mastoid cortex, or by long-continued attacks of mastoid pain.

These are the three forms of mastoiditis according to the presence of one or another of which, one or the other of the mastoid operations is to be done.

In each of the three forms—acute, subacute, chronic—the most important indications for operation are pain and headache, to which might be added a third indication, namely, drooping of the upper back wall of the auditory canal.

As to the operations—first of all I wish to speak of that curse of mastoid surgery, the Wilde incision. Probably had this simple performance been only a trifle less simple, it would never have found favor. The only good it can ever do is either by way of blood-letting, or else by way of removing pus which lies already just beneath the skin. Patients recover after Wilde's incision, to be sure, precisely as they may do without treatment of any sort or variety. Nevertheless, the radical operation, when correctly done, is so free from danger, and, moreover gives results so well-nigh perfect that an excuse for a Wilde's incision requires to be searched for very carefully. Those who wish to make the Wilde incision may do so merely by making a long cut behind the ear down to and through the periosteum

A modified Wilde's incision—and a procedure which really does much good—consists in entering a small knife through the drum membrane near its attachment to the posterior wall of the ear, and then cutting upward along the attachment until the antrum is reached, and then, without withdrawing the knife, cutting outward, all the while to the bone, along the posterior wall of the canal. This extensive incision should be kept open until recovery takes place, or the radical operation is done. Occasionally this modified Wilde incision may properly be substituted for radical procedure, but, as a rule, the latter should be resorted to at once.

The best operation by far for acute mastoiditis is the Schwartze operation and this is properly applicable to acute cases only.

The scalp for several inches round the mastoid is shaved, washed, and disinfected. The incision is made from the mastoid tip round to a point immediately above the auricle, and it should lie close to the latter structure for the upper three-fourths of its length. It severs, of course, all soft tissues. Bleeding having been checked by clamp and sponge, and the periosteum having been shoved forward and backward, the sides of the wound are retracted till the posterior wall of the meatus, the spina meatus, and the temporal line come into view for landmarks. A recent author recommends a flap operation. He makes a second incision, beginning it at the middle of the incision just described, and carrying it for one inch directly backward toward the occipital protuberance. This incision is undoubtedly of advantage in numerous cases, since, when the flaps are turned out of the way, free access to the bone is secured.

After the incision and the stopping of the hemorrhage, the chisel and mallet are brought into requisition. The chisel should be held almost parallel with the surface of the bone, and only very thin slices, or scales, shaved, or pared, or peeled, away at a time. Begin the peeling, or paring, near the tip of the mastoid, and open up completely the large cell which lies enclosed in that part. If the walls of this cell are carious, remove them thoroughly with the rongeur. Do not, however, remove the mastoid cortex higher than the temporal line. If you do, you may enter the middle fossa of the skull. If the temporal line is unusually prominent, cut lower still, since a prominent temporal line ordinarily indicates a deep middle fossa. The equilateral triangle formed by the suprameatal spine, the temporal ridge, and the posterior margin of the external auditory meatus, indicates the situation of the antrum, which lies directly inward from some point within the area of this triangle. Often the entire cortex should first be removed with chisel and gouge, the cellular portion of the apophysis being then removed with curet and rongeur. After the cortex is removed stick rather closely to the posterior wall of the meatus to keep from injuring the lateral sinus. Finally, with a probe bent to a right angle one-fourth of an inch from its tactile extremity, feel your way repeatedly, in order to know just when you enter the antrum. Thus you will not pass through and beyond that cavity with the result of injuring the facial nerve and the semicircular canal. The antrum, as stated at the outset of this paper, is the destination of the cone-shaped operative canal. When you reach the antrum, stop. The cavity will be found, almost always, at a depth of not greater than half an inch.

Now for the operation for mastoiditis of the chronic variety. For this affection I do the Staacke-Schwartze operation, often called simply the Staacke operation. It is the Schwartze operation as modified by Staacke. By this Staacke-Schwartze operation the upper back wall of the bony canal is removed and the skin and cartilaginous part of that passage split by a long incision extending from the drum membrane outward along the posterosuperior wall of the meatus. A vertical incision is then made across the outer end of this incision, and so are thrown altogether the canal, the tympanum, the antrum, and the mastoid superficial cells. As can be plainly seen this is even a more radical operation than the unmodified Schwartze.

For subacute cases, I sometimes do the Staacke-Schwartze, sometimes the unmodified Schwartze, according as the acute, or the chronic symptoms predominate.

A very important question touching the matter of the radical operation is, what are the results of injury to those structures which, in the foregoing operation, we have found that we should strenuously seek to avoid? How, also, in case we should happen to injure these structures, should we act to render the consequence as light as possible?

In case we open the cranial fossa, we may, of course, produce meningitis, cerebritis, or abscess. If the operation has been properly conducted, however, we shall probably find no such complications resulting. The accident ought not, at least in the vast majority of cases, to occur. Should it happen, disinfect the exposed contents of the cranial cavity, cover them with a pad of gauze, and continue the operation. A light catgut suture may be taken in the dura mater, if that membrane be torn to any extent. Should the lateral sinus be exposed, but not opened, proceed exactly as in the case of an exposure of the contents of the middle cranial fossa: disinfect, protect, and go on. The sinus, unopened, may be known by its bluish-gray color, and its compressibility with the probe. Its color is precisely that of the dura mater; in fact its wall is composed of a fold of dura mater. When the big vein is opened, there is no difficulty in recognizing either the structure or the fact. The hemorrhage is profuse. It may, however, easily be controlled by compression with an antiseptic pad. The worst thing about opening the sinus is that it leads to serious postoperative complications.

The facial nerve is not often injured. When the accident does happen, and paralysis follows immediately, the outlook is bad; if the paralysis does not put in an appearance for several days—if, in other words, the nerve has merely been bruised and not severed—the trouble ordinarily disappears quickly under galvanism, faradism, and strychnin.

Injury to the external (horizontal) semicircular canal results in severe vertigo, and sometimes complete deafness. Treatment, if any, is symptomatic—and useless.

Death may occur from any of these accidents, when they happen in the hands of an inexperienced operator. As to the necessity of experience in the performance of the mastoid operation, Politzer remarks, though at a time when this operation was vastly different from what it is now: "The operation should only be done by specialists who are skilful in surgery. To become sufficiently skilful the operation should be done at least 40 times on a cadaver." It is hard to see why exactly 40 disciplinary operations should be required, yet the substance of the dictum is undoubtedly correct.

When the operation is complete, the wound is dressed. The antrum, the attic, the tympanum, the hollowed out shell of mastoid, and, finally, the external auditory meatus packed with gauze. If you have done a Staacke operation (*i.e.*, the operation for the chronic disorder) bring together the soft parts over the mastoid with sutures. Dress the cavity—by removing the old gauze, drying the wound, and inserting fresh gauze—at first daily; afterward, as indications dictate. Of course after the Staacke operation the dressing is done through the incision in the upper back wall of the meatus, the wound in the mastoid having been closed with the sutures.

Thin rubber tissue, thoroughly antiseptized, may be used to line the cavity before the gauze is introduced. This adds to the patient's comfort when the gauze is removed, and also lessens the likelihood of renewing hemorrhage by pulling away granulations in the gauze meshes.

In more than three-fourths of the cases in which the radical operation is done the discharge ultimately ceases completely. In the cases in which the discharge does not ultimately cease completely, there exists no longer any danger to life. The time required for complete healings ranges from two weeks to several months. In children the process is much more rapid. It is said that healing may be hastened by covering the raw surface with grafts according to the method of Thiersch. When the cavity is entirely healthy, it is seen to be covered by smooth, glistening epithelium.

What is the effect on the hearing power? Generally, absolutely nothing. The operation is not in fact primarily performed to assist the hearing. In some cases there is improvement, but not much.

Having considered the mastoid operations, and also the difficulties and the dangers which beset these procedures, as well as their results, let us just glance for a moment, and very briefly indeed, at the complications which result from the mastoid disease itself, and, speaking generally, from the disease itself when neglected. In other words, let us consider what, in a case of mastoid trouble, we may possibly have to deal with over and above the mere mastoid trouble. These incidental affections are: Meningitis, diffuse and localized; cerebral abscess; sinus thrombosis, generally of the lateral sinus; embolism; pyemia.

The symptoms of diffuse meningitis: Constant high temperature, intense headache, photophobia, strabismus, rigidity of the neck, vomiting. The slow pulse of meningitis of the convexity is absent, for the location of meningitis occurring as an ear complication is at the base of the brain as a rule.

If the meningitis is localized, many of the foregoing symptoms are wanting, and the temperature is nearly always only slightly elevated.

Cerebral abscess is rare. It presents no characteristic signs. As has been said, "So far from producing characteristic symptoms, it is rather the absence of characteristic manifestations, but the failure of the patient to improve, which should always excite suspicion of his condition."

Sinus thrombosis is generally indicated by a sudden jump to a high temperature. Sometimes the thermometer will register 105°.

The symptoms of pyemia are as usual.

Treat all these complications by a thorough mastoid operation, if the patient consents, and the time for interference has not gone by unmistakably. Then, if there is a cerebral abscess or a sinus thrombosis, do something further. If there is an abscess, open it. Whether it exists in the parietal lobe of the cerebrum or in the cerebellum, open it. To open it you must first find it. This you do as follows: Beginning at the top of the mastoid wound, make an incision which at first runs a little forward, and then turns upward and backward, finally coming down to the external occipital protuberance and an inch below it. The incision is convex upward. Detach the flap so outlined by dissecting downward. There will be no danger of sloughing, since the arterial supply of the flap is from below. Open the skull with a small trephine applied with its center to a point exactly two inches behind and above (as much above as behind) the external auditory meatus. Enlarge the opening sufficiently by means of the rongeur. Sometimes the abscess will be found between the dura and the skull (extradural abscess). If not found there (by delicate use of the probe passed in all directions) open the dura freely, and search for the pus collection between that structure and the brain. When the pus is found, it should be evacuated either by aspirating or by incising. Sometimes the abscess can be best found by removing the inner wall of the operation-cavity in the mastoid.

If there is a sinus thrombosis, expose the sinus through the wound in the mastoid. Incise the vein longitudinally, and remove the clot with the crust. If the clot runs into the internal jugular vein, expose this structure by an incision in the neck. Then ligate twice below the clot (if the clot be not too extensive), divide the vein between the ligatures, incise it longitudinally above the superior ligature, and, finally, curet out the clot.

Two matters remain to be mentioned. The first is the fact that the spontaneous discharge of pus from a mastoid is no contraindication whatever to an operation. The second is that, if, after operating, you find no pus, do not think your operation has been in vain. The tenderness, the headache, the wakefulness and the intratympanic difficulties will disappear if you have performed your operation properly.

To sum up: The immediate object of a mastoid operation is the production of a more or less conical opening in the mastoid process, the base of the cone being at the cortex, or outer shell of the bone, the apex at the largest of the mastoid cells, the socalled antrum. The ultimate object is to relieve a mastoiditis, suppurative or nonsuppurative; specific, simple, traumatic; acute, subacute, or chronic. The kind of operation done will vary according only to the acuteness or the chronicity. If the disease is acute, the Schwartze operation will be done; if chronic, the Staacke. In operating, certain dangers should be borne in mind. If we go too far backward, we shall reach the lateral sinus; if too far forward, the middle lobe of the brain; if too deeply inward, the facial nerve or the horizontal semicircular canal. We should therefore generally attempt to reach the antrum by the directest possible route, and to stop when we have reached the cavity. Should, however, any of the accidents mentioned occur, we should proceed in the manner indicated—compress, disinfect, and go on. If, in addition to mastoiditis, there is a cerebral abscess, it should be evacuated by the use of the trephine, the rongeur, the probe, and the knife. If there be sinus thrombosis, incise the vein and evacuate the clot, following the vein, if necessary for this purpose, clear down into the neck.

Institute of Tropical Medicine for Ceylon.—The Ceylon government, has established a pathologic laboratory in Colombo for the study of tropical diseases.

MULTIPLE CHANCRE.

BY
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The doctrine of the invariable unicity of the initial lesion of syphilis (the authorship of which has repeatedly yet erroneously been ascribed to Ricord), though well known to syphilologists to be entirely untenable, is so generally accepted by the profession at large as almost to become axiomatic. Indeed, so deeply rooted is this belief that when multiple genital lesions of venereal origin are encountered, the possibility of such lesions being syphilitic chancres is, ordinarily, summarily rejected. While in fact the initial lesion is generally single, in a goodly proportion of cases it is found to be multiple.

The importance of the due recognition of this latter occurrence has given rise to a considerable literature of late on this topic, largely of statistical character and mainly from French sources.

Many of these publications have been editorially reviewed in a masterly manner by Dr. R. W. Taylor[1] in the December number of the *Journal of Cutaneous Diseases*.

The interest awakened by Dr. Taylor's article has prompted me to search the records of the skin and genitourinary class of the Outpatient Department of the Presbyterian Hospital for facts pertaining to this subject.

In this paper I will confine myself strictly to a brief clinical retrospect, and entirely leave aside the many and highly interesting theoretic considerations involved.

Frequency of the Multiple Chancre.—The results of my investigations show that the multiple chancre is far more frequent than I had anticipated, for of the 273 cases of initial lesion of syphilis recorded in recent years, 33, or a proportion of more than 12 percent, were of the multiple form. This figure is less than half of the estimated frequency for this form as given by Dr. Taylor, who believes that in about one-quarter of all cases of chancre, the lesion is multiple.

This estimate apparently is based upon the data of Queyrat[2] and those of Gaillard,[3] Lafosse and Papegaey in two series of statistics; in the first of which the multiple lesion was found present in the proportion of 26 percent among 500 cases of recent chancres.

The statistics of Gaillard, Lafosse and Papegaey are from the immense material of the Ricord Hospital and were gathered in the services of Humbert, Mauriac, Queyrat and Remault; they embrace 12,069 cases of initial lesion, among which 3,065 or 25.39 percent were of the multiple type. These authors also refer to the data of Ricord, compiled by Fournier, to those of Julien, and finally to Fournier's personal observations yielding respectively 25.22 percent, 33.26 percent, and 17.91 percent, for the lesion under consideration.

Quite recently Beaurain[4] and Durand of Rouen, have published their researches on this point with results paralleling those of Queyrat, that is 26 percent.

More in accord with my own experience is that of Lewin,[5] of Berlin; this observer reports that in 90 percent of his cases the lesion was single.

These observations, derived from various sources, should be sufficiently impressive to caution us not to pin our faith in too great a measure on the constant singularity of the initial lesion. Such a belief will lead, in not a few instances, to diagnostic errors and tend to swell the by no means trivial list of unrecognized syphilis.

The Number of Chancres.—Of our 33 cases, in 25 there were two lesions, in six, there were three; and in two there were five. Queyrat in his series gives 13 as the maximum of chancres present. In this connection, it may be stated that the oft-cited case of Fournier with 24 mammary chancres does not represent the greatest number of such lesions reported.

This number is exceeded in an interesting case mentioned by Ehrmann,[6] of Vienna; in this instance 36 chancres developed upon an equal number of efflorescences of acne. Indeed, it is a matter of rather common experience to find banal affections of the skin provide a field for multiple syphilitic infections. Especially does this hold true for scabies; numerous events of this kind have been reported. In one of our cases of dual chancre this occurrence was noted.

With the great increase of late of scabies in New York, we have found the association of this ailment with syphilis to be quite common. While as a rule, each affection runs a course typical to itself, not infrequently do we observe a reciprocal modifying influence of one malady upon the other. Thus, if a patient in the secondary stage of syphilis contract scabies, the lesions of the latter may become indurated at their base, or a coexisting papular syphilid may be converted into a papulopustule by reason of pus infection from a concomitant pustule of the itch. Or finally, the supervention of such pustules of scabies upon a syphilitic person, at the time free from cutaneous manifestations of this disease, may provoke the development of an ecchymatous syphilid, according to the rather well-established law that in syphilitics, irritations to the skin frequently induce at the point of irritation the evolution of syphilitic products.

Location.—The multiple lesion was either purely genital, purely perigenital, or purely extragenital in location. The first group embraced 30 cases; the second, one; while two instances were extragenital in position.

Combinations of these groups did not at all figure in our material, though numerous well-attested examples of this kind have been recorded. Such combinations of multiple infections, situated at a considerable distance from one another, have been aptly designated by French authors as *chancres à distance*. For a special variety of such combinations of multiple infection with location of a lesion in the genital zone together with one of the face, Queyrat has coined the term *chancres bipolaires*.

The Evolution of the Multiple Chancres.—Concerning the mode of evolution of the multiple lesion, our histories, unfortunately, are incomplete. In the majority of cases, however, the statement was elicited that the development of the chancres was synchronous. In a number of instances, the evolution was successive.

The interval between the apparition, of the first and the successive lesion or lesions, with the exception of one case, never exceeded a week. This exceptional case was one with three facial chancres.

Two of these chancres appeared simultaneously and were followed after a period of two weeks by the third lesion.

In conclusion reference should be made to the experience of Lucien Loften[7] on this subject, as observed in the negro.

This author holds that in the negro, the dual chancre is the rule. While syphilis in the negro differs in more than in one respect from that of the Caucasian, we have not at all found the multiplicity of the initial lesion a predominant feature of the former race.

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TREATMENT OF CANCER OF BREAST.[1]

BY
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Great as have been the advances in treating cancer of the breast in the past four years, there is still room for improvement. Röntgen ray, radium, and serum treatment have been tried and found wanting. The very best results are obtained by surgical operation only. These have been so good, that many surgeons feel that they are only prevented from attaining a high percentage of cures by the fact that the patients reach them too late to get the full benefit of surgery.

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[1] Read at the meeting of the Western Surgical and Gynecological Association, December 28–29, 1905.

Why do the patients reach us so late?

1. Those who have lumps in their breasts do not understand the risks they are running. 2. They have a dread of surgical operations, due to ignorance or the knowledge of failures among some of their friends. 3. They do not discriminate between one operated upon early and radically, and one operated upon late and incompletely. 4. They are misled by honest, well-meaning physicians and surgeons who do not insist on making an exact diagnosis of the nature of all lumps in the breast.

The only way to correct these conditions is for every surgeon to insist on exact diagnosis in all cases of "lumps in the breast" in the very beginning, not to wait until the classic diagnostic points are present. This can only be done by making an incision, removing the lump and having a microscopic examination made by a competent microscopist while the patient is still under the anesthetic and everything prepared for a radical operation. The time required for the frozen section is only about 10 to 15 minutes. If there is the slightest doubt, do the radical operation, thereby giving the patient the benefit of the doubt.

Following this plan, I have had 18 patients in whom the lump was small and as I thought benign. There were no symptoms or signs by which I could say the growth was malignant. My procedure is to explain to the patient its nature, remove the lump, decide by the microscope and proceed according to the finding, thereby removing doubt as fully as possible. Sixteen of the 18 cases proved malignant, and two benign.

The radical operation was done in all 16 cases. All the patients made satisfactory recoveries, and have now no complaints to make in regard to the condition of the hand and arm. The longest time that has elapsed since operation in these 18 cases is five years, the shortest one year. Of course this is not sufficient time to say positively that they have been cured. However, the fact that careful microscopic examination was made of the axillary contents and mass, and no malignancy found except in the particular lump in which it was found at the time of operation, the present health and comfortable condition of the patients are reasonable assurance in regard to the future. The exact diagnosis having been made, the most that treatment can yet do has been done.

Great care is necessary in doing the operation to remove the tumor for microscopic examination. The danger of reinoculation is very great. In a case in which I considered the tumor in the breast innocent, I removed the tumor by cutting down to it and carefully dissecting it out, closing the wound which healed by first intention. Careful microscopic examination showed that I had been in error and that the tumor was malignant. I explained my error to the patient and advised immediate radical operation. This was declined. In three months the patient returned for examination. I found an enlarged and tender gland just at the lower edge of the pectoral muscle. I again urged radical operation. It was again declined. In six weeks the patient returned with the gland enlarged and still quite tender. I could find no other glands. Operation was accepted this time and done at once, the dissection being made as carefully as I was capable of. Two glands were found in the axilla in addition to the one found before operation. On examination all these proved to be carcinoma. In about four months from the second operation, the patient returned, with the glands in the neck on both sides and those in the mediastinum enlarged and rapidly increasing in size, with difficult respiration and severe pain.

Inside of three months the patient died after great suffering.

Here was a case of reinoculation at the first operation and rapid advance between the second and radical operation. Therefore, the danger of reinoculation is very great and more likely to occur than many are inclined to think.

Since then I have followed the plan of raising the whole breast, covering the muscles, etc., with gauze, and either making the cuts to remove with a cautery knife, or cauterizing thoroughly with carbolic acid, as soon as the cuts are made. Since following these plans, I have not had a case of reinoculation.

I wish to refer to a patient just operated upon, in whom the gland, the skin over it just outside the nipple as large as half a dollar and the axillary glands were involved. The patient was aged 54 and said she had first noticed the lump when 34 years of age. Two years ago it began slowly to enlarge. Here is a case in which the lump was malignant, remaining stationary for 18 years, or benign, becoming malignant after that time. This goes to prove the danger of allowing such cases to go on until the diagnosis of cancer can be made by the usual examination.

CONCLUSIONS.

1. All tumors of the breast are a threat at the well-being of the patient.
2. Positive diagnosis cannot be made in the early stages without microscopic aid.
3. All tumors of the breast should be removed with care to prevent reinoculation, microscopic diagnosis made and radical operation proceeded with at once if found malignant. This method gives the best chance of improving the results of surgical treatment of cancer of the breast.

CLINICAL NOTES.

REPORTS ON TONGUE-LIKE ACCESSORY LOBES OF THE LIVER, AND ACHYLIA GASTRICA.[1]

BY

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This malformation is also known as linguiform lobe, partial hepatoptosis, Riedel's lobe or appendicular lobe. My attention was particularly directed to the malformation by an article by Dr. Alex. McPhedran, of Toronto, published in the *Canadian Practitioner*, June 1896. These accessory lobes were first noted by Hzetl. Haller, Gruber, and Cruveilhier afterward described them. They are parenchymatous prolongations, and are thin, round, or tongue-shaped in form and variable in size.

They usually rise from the inferior surface of the liver and are connected to it by a pedicle containing "vasa aberrantia". The quadrote lobe is the seat of predilection.

Toldt and Zuckerkandl, of Vienna, in an article published in 1875, described their form and structure. Broca found them on both upper and lower surfaces in a microcephalic individual. Eichhorst refers to malformations caused by tight lacing and Frerichs, in 1858, in his treatise on the liver, mentioned tongue-like processes due to malformation of the liver. H. Thompson, of Oxford, reported a case in 1885, and in 1889 he saw the processus caudatus separate in a fetus. Cecil H. Leaf, of Guy's Hospital, London, says these processes are atavistic, because they are often present in monkeys.

These tongue-like lobes are often quite movable, are often discovered accidentally, and may not be accompanied by any bad effects. They may seriously complicate the differential diagnosis of abdominal tumors. or cause symptoms closely simulating calculous cholecystitis, and floating kidney. They may be mistaken, even after most careful examination, for omental tumor, tumor of the pylorus, distended gall-bladder, pancreatic cyst, or appendicitis. In connection with the latter I wish to report the following case.

Miss A., aged 16, while attending school in December, 1903, was taken suddenly with acute pain in the right side of the abdomen. In due time she made a partial recovery, but the soreness remained, with indigestion, and a general feeling of ill-health. I saw her first in April, 1904, and after a careful examination, not having discovered any evidence of an abdominal tumor, diagnosed chronic appendicitis of a mild type. I prescribed rest, proper diet, and intestinal antiseptics. She slowly improved, but her digestion was faulty, and there was some neurasthenia. In November, 1904, I performed an appendicectomy, making a McBurney incision. On introducing my finger into the abdominal cavity, I felt what I at first thought was a dislocated kidney. Having extended the incision upward, I brought to view a tongue-like process, two inches wide and three-fourths of an inch thick. It ascended and descended with the respiratory movements, careful examination showing it to be a tongue-like process having its origin from the right lobe of the liver. I had a long and tedious hunt for the appendix, as the transverse colon was prolapsed, and down in the right iliac fossa, which very much complicated the search. Having found the appendix, I removed it, as it exhibited signs of having been inflamed. The patient made an uneventful recovery, and has improved so much in health and appearance, that I failed to recognize her about a month ago. As there is slight ptosis of the stomach, she still complains of some indistinct symptoms and slight uneasiness in the region of the incision.

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[1] Read before the Ontario Medical Association, June 7, 1905.

I do not think this abnormality of the liver is of frequent occurrence, as I have never before met it in any abdominal section I have done or at which I have been present. Its occurrence in so young a person excludes tight lacing as a cause.

As the malformation is met mostly in those of mature years, its occurrence in this young girl adds interest to the case. I wish to acknowledge my obligations to my friend, Dr. Basil Harvey, Instructor of Anatomy in Chicago University, for his assistance in furnishing me with the history of this malformation.

ACHYLIA GASTRICA.

The following case of achylia gastrica, or atrophy of the stomach, may be of interest. It is a terminal of chronic gastritis, but is most frequently met in carcinoma of the stomach. Riegel in Nothnagel's Practice, says that total atrophy of the gastric glands may lead to serious disturbances of the general health, but that it has been demonstrated that a complete loss of peptic power may be tolerated for many years, without impairment of the general health, provided the motor power of the stomach remains intact, and the intestine can vicariously assume the functions of the stomach.

The patient was Mrs. M., married, aged 46, and the mother of one child. She was first seen by me in August, 1903. I found her thin, pale, and complaining of indigestion. She informed me that she had trouble with her stomach for the past five years, that she had little desire for food, vomited a greenish fluid frequently, and had at times considerable pain in the region of the stomach. On examination, I found the abdominal muscles tense and on guard, and that pressure over the stomach produced pain. Five years before, she had an attack of mucous colitis, which lasted for several months; I prescribed various remedies and diets, without much benefit. In November of 1903, I began lavage of the stomach, which for a while seemed to afford some relief. This was continued for months, but occasionally she would vomit quantities of the greenish fluid, which failed to give the reactions for bile. In August, 1904, she became worse and refused to eat, and I began giving nutrient enemas. These soon disagreed, and she asked for their discontinuance. I called in Dr. F. R. Eccles, of London, and like myself, he thought she had cancer of the back wall of the stomach. There was now great emaciation, hardness of the muscles and absence of any tumor on palpation. I may say examination of the stomach contents showed absence of hydrochloric acid, but Uffelman's test gave the lactic acid reaction. Microscopically, yeast cells and micrococci were found and I thought I discovered the Oppler-Boas bacillus. She died of starvation on October 21.

Autopsy was made by Dr. Wm. Reid four hours after death. The body was greatly emaciated, no fat in the abdominal walls, nor in the omentum, which looked like a net. The liver, gallbladder and pancreas showed no sign of disease. The stomach was atrophied and in size no larger than the duodenum. There was no infiltration nor enlargement of the mesenteric glands. The walls of the stomach on section were found slightly thickened, the gastric mucosa was very red, and had a velvety look. The stomach was empty and its capacity would not exceed four ounces. The cardiac orifice admitted my finger. The pylorus was almost closed, admitting the tip of my little finger, which is rather small, on using considerable pressure. The transverse colon for about ten inches was atrophied and thickened, being about three-fourths of an inch in diameter. This was probably caused by the mucous colitis. While the walls of the stomach were sclerosed, I found no distinct evidence of cancer, and registered the cause of death as achylia gastrica.

This condition of atrophy of the gastric mucosa is said by Riegel to be by no means so rare as is ordinarily believed.

Physicians in the Russian Douma.—Late advices state that there are 17 physicians in the Russian douma beside several members who have studied medicine but have not been officially registered.

ENTERIC FEVER FOLLOWED BY RELAPSE, COMPLICATED WITH TYPHOID INFECTION OF GALLBLADDER. RECOVERY.

BY

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The patient was Mrs. L., a housewife, aged 38, V-para. My first visit was made September 4, 1905, on which day the patient took to her bed after a week of malaise, languor, and fever at intervals. Her temperature was 102°. The family had recently removed to the present location, and had been using water from a surface well with very unsatisfactory surroundings. Upon analysis the water was found to be heavily contaminated.

A diagnosis of typhoid fever was made with the usual reservations. During the three days following, her condition became more pronounced and as she lived seven miles from the city, she was brought by ambulance to Seattle General Hospital. On arrival her temperature was 104°. Brand bath treatment was followed for first week, during which her temperature ranged from 103° to 105°, except immediately following a bath, when it would show a reduction of from 1° to 2° for a short time. For the first ten days the patient was unable to void urine voluntarily, and was catheterized three times daily. Widal test gave positive reaction. On September 17, her pulse was 118 to 130, respiration was very irregular, numbering 14 to 30 per minute at different times, with heavy sighing character, persistent nausea, many nervous chills, and great weakness. On account of the latter, the tub bath was discontinued and the patient kept in cold pack from time to time, alternating with Leiter's ice coil to the abdomen. Her temperature now averaged 104°, pulse 120, with skin cold and clammy, giving little reaction to cold applications.

September 18. There was much tenderness and swelling of the posterior cervical glands, which grew more acute daily for three or four days, and then yielding to continued hot applications, gradually subsided. She also had almost constantly a severe pain in the region of the heart, this requiring the use of morphin hypodermically, two or three times daily.

At 3 a. m. on September 20, her temperature per rectum was 105°, pulse 130, respirations 36, and of a heavy sighing character. The heart was supported with digitalin, strychnin, and whisky. Little change was perceived in her condition until 9 a. m. when a slight improvement was noted, which continued through the remainder of the day. At 11:40 p. m., September 21, the patient collapsed. Her temperature per rectum was 105.6°, pulse 156, respirations 32, associated with cyanosis and involuntary urination. Stimulants were administered as before, with the addition of a hypodermoclysis of normal saline solution, to the amount of 32 ounces. One hour later her rectal temperature was 104°, pulse 130, respirations 28. Four hours later rectal temperature was 103°, pulse 120, respirations 18 and the patient was sleeping. September 23 to September 30, temperature ranged from 102.5° to 99°, first falling to normal at midnight of the latter date. For several days following the collapse food was discontinued by mouth, and administered by the rectum.

October 1 to October 9, her temperature ran from normal to as high as 102°, averaging 100°. October 10, patient relapsed and the temperature rose to 103.8° and for three weeks following averaged 101°, though the course of the relapse was much milder than the first attack, and patient was in a better condition generally, than at its onset.

November 4 a slight icterus was noticed in her face, this condition becoming greatly exaggerated during the next 24 hours, involving the sclerotics and extending to the entire body. The patient had a chill, followed by sweating and vomiting to a distressing extent, much flatulence, severe pain at the heart, base-occipital headache, and extreme tenderness in the region of the gallbladder, extending to the infrascapular region. The gallbladder was distinctly palpable, temperature ranging from normal to 101°, pulse averaging 90. The most distressing symptoms subsided somewhat during the next six hours, and upon consultation it was decided to hold operative measures in abeyance, pending developments.

A blood count at this time showed white blood-corpuscles 10,300. No examination for typhoid bacilli in the blood was made, as the necessary culture medium could not at the time be obtained in the city.

There was no further exacerbation of symptoms, and 48 hours later, after free exhibition of calomel, there was a distinct improvement in the yellow color of the skin, which gradually faded, disappearing entirely in about ten days. The gallbladder was distinctly palpable for one week.

During the entire period of the relapse the patient did not have a bowel movement except as the result of laxatives or enemas. She now became greatly emaciated, and was failing rapidly, more I thought from lack of nourishment than for any other reason, and against the advice of consultants, I put her on a soft diet, guardedly, and with immediate favorable results.

One week later the temperature subsided to normal and after two weeks more the patient was removed from the hospital, after having been there eleven weeks.

She has since returned to her suburban home, and while not yet able to attend to all her household duties, is making satisfactory progress to her usual health.

This case was discussed at one of the meetings of the King County Medical Society, in connection with a report of a similar case by Dr. C. W. Sharples, who, with a number of other physicians in the city observed the progress of the case afterward, and all of whom agreed as to the diagnosis.

Subsequent note: The foregoing report was written about December 15, but its mailing for the time being was overlooked, and for this reason I am able to give another feature of the case. On January 7 and January 10, the patient had very severe attacks of biliary colic, the attack on January 7 lasting about six hours and causing constant and extreme agony until relieved by morphin. The second attack lasted about three hours and terminated abruptly by the passing of a stone from the gallduct before the arrival of a physician, therefore, in this attack, no morphin was used. Two days later the patient was markedly jaundiced but otherwise feeling tolerably well. I have advised operation and expect to have the patient again in the hospital in a short time.

A "patent-medicine" bill, requiring all manufacturers to submit samples to the government, has been prepared by the Canadian chief analyst and has been presented to the House of Commons for consideration. It is feared that it will be difficult to pass it this year.

Cholera Vaccine Checks Disease.—The Health Bureau at Manila gave free vaccination to prevent the spread of cholera during the recent epidemic. A test made of the vaccine since the outbreak of the disease showed that it acts as an absolute preventative. Of the many natives in the infected districts who had been treated with the virus, none developed the disease. All of the health officials were vaccinated and none developed the disease.

SPECIAL ARTICLES.

THE INFLUENCE OF MUNICIPAL AUTHORITY IN SUPPRESSING VENEREAL DISEASE.[1]

BY

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of Philadelphia.

Among the multifarious duties of official departments dealing with matters concerning public health, none is more important than the control of communicable diseases. The importance of the problem must be measured by the public danger and the preventability of the specific disorders to which official energy is to be directed. In the great masses of communicable diseases health authorities are strongly supported by an enlightened and omnipotent public and reinforced by an educated profession, and, as would naturally be expected, especially by medical men. Any great public movement to be efficient must be supported by a stronger influence than the written law, namely, the irresistible force of public opinion. The alarming prevalence of venereal disease, the secret nature of the practices by which it is propagated, and the persistency with which we conceal from the general public the burning dangers that surround this subtle despoiler of happiness and home, have combined to weaken official efficacy and lessen the activity of department energy.

I am not one of those who believe that official action should be directed toward licensing the prostitute or the brothel, or any allied form of official supervision that gives to vice the suggestion of legal sanction. Nor am I optimistic enough to believe that society is prepared for violently restrictive enactments contrary to the traditions and belief of the English-speaking people. It is by no means certain that licensed prostitution and official supervision of this form of vice, act either as deterrents or prophylactic measures. It seems reasonable to believe that official cognizance of individuals likely to disseminate infection must necessarily make for an increased danger by awakening in the minds of the uninformed at least the suggestion of a belief in the physical harmlessness of sexual dissipation. Every medical man knows that no amount of care, no degree of expert training, no method at present available, can insure the noninfectiousness of the individual and render contact with the uninoculated absolutely safe. The slumbering infections that must necessarily escape official recognition, are the more dangerous ebcause of the very fact that the latent nature of the infection is most detrimental by offering no physical deterring influence to the consummation of the sexual relations. Aside from what appeals to me as being manifestly impracticable there arises the insurmountable repulsiveness to any official action bearing a suggestion of the idea that this form of vice is permissible.

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[1] Address before Philadelphia County Medical Society, March 28, 1906, part of Symposium on "Sanitary and Moral Prophylaxis."

An important and as yet unsatisfactorily solved question is the right of health authorities to exert any custodial influence over individuals known to be actively infected, and so totally depraved as to continue brazenly a line of contact which assures propagation of venereal infection. Although highly desirable it is not certain that we possess the legal machinery necessary for exerting a custodial care by immuring or quarantining such individuals. The licentious prostitute and roué undoubtedly constitute menaces to the public health and it is possible that the cloak of the law might be so spread as to bring them within its folds. I am not aware, however, that the enactments under which general health regulations are at present operated could properly be stretched to the extreme, necessary to bring these individuals under the ban, and it is doubtful whether new laws, under existing social conditions, would act as automatic correctors of prevailing dangers. Certainly the individual who persists in spreading these repulsive diseases constitutes a menace that cannot safely be ignored and enlightened public opinion should strongly support any restrictive measure that would deprive such a person of possibilities in the direction indicated.

A form of official suppression partaking more of the nature of a political regulation than a sanitary measure, and especially directed toward brothels which flauntingly carry on their nefarious business, must, of necessity, be of value. Establishments publicly paraded, or so conducted as to offer general knowledge or ease of access should undoubtedly be suppressed. Such houses, usually connected with speak-easies and formerly with saloons, are greater menaces because of their unblushing publicity and also by reason of the fact that they gather women of the most depraved and vicious characters, and, therefore, the most dangerous. They certainly constitute menaces to the public health as well as to the public morals, and should properly be suppressed by either the public or health authorities. In this connection it may be interesting to note that coincident with the recent widespread activity of the police and private societies the number of admissions to the venereal wards of the city hospital has perceptibly diminished.

All who have thoughtfully devoted their attention to the social evil are agreed that the most efficient influences that can at present be exerted must be educational rather than restrictive and directed to an awakening of the public mind to the dangers of this form of immorality to both the public conscience and public health. The unexpected success of the crusade against tuberculosis has been largely due to the avidity with which the public has sought enlightenment. It may be confidently predicted that an equally widespread educational interest may be aroused concerning venereal diseases.

The subject assigned to me does not permit a discussion of all the agencies through which the public may be reached; the patient, physician, minister, teacher, employer, educational institutions, clubs, societies, etc., must each wield an influence and to these should be added special efforts made by properly organized municipal forces. It is possible for health authorities to cooperate with physicians in popularizing appropriate knowledge by properly composed pamphlets and circulars, privately distributed by medical men having charge of the cases. The perfect operation of this plan would require an official report of all infected individuals, and this at present does not seem feasible. In the meantime the health department may prepare for gratuitous distribution, printed matter setting forth the communicability of particular venereal diseases with directions for the protection of the patient and those with whom he comes in contact. Such printed matter judiciously distributed must exert a good influence, the extent of which will largely depend upon the intelligence of the individual but even in the uneducated should arouse a sense of responsibility, and awaken individual action. The health authorities could accomplish something by supplying the physicians with such printed matter and offering it for distribution by the large public clinics connected with hospitals and dispensaries. Physicians are undoubtedly negligent in not calling the attention of their patients to the danger of propagating venereal disease both to the innocent and to the social offender. If supplied with properly worded circulars the probability of calling specific attention to the dangers of such diseases would be more certain and the patient's memory alone would not necessarily be trusted with the important advice.

As a part of the educational campaign it is possible that the city authorities, through the Department of Health or the Board of Education, might arrange definite lines of instruction, preferably by lectures addressed to the advanced classes and especially to youths at that age when the sexual functions first conspicuously become manifest. The selection of instructors for the purpose indicated is fraught with no little difficulty as but few men possess that sense of proportion and nicety of judgment which fit them for teachers in this highly important field. Possessed of a properly equipped corps of teachers and having the cooperation of school authorities much might be done along these lines.

The repeatedly suggested plan of asserting an official supervision over individuals about to contract marriage has been generally regarded, and I think justly, as bordering on the Eutopian. Attempts to control the marriage of epileptics, imbeciles, the insane, the tuberculous, the alcoholic, and the degenerate, have met with indifferent success but it seems to me that, in the limited way, it would be perfectly possible to exert at least a restraining influence on the marriage of those suffering from communicable forms of venereal disease. Transmitted in this way, the wife, mother-to-be, and offspring, are the innocent sufferers and the suggestion that the man who contemplates marriage should be certified as free from any venereal infection would seem to be within the realm of the practicable, and offers reasonable assurance that the seeds of ruin will not be planted in the newly-made home. Of several plans the exact method by which this suggestion might be made operative remains to be determined but there is no apparent inseparable difficulty to requiring that the man be certified as free from any venereal disease before permitting him to contract marriage.

THE SIDE-CHAIN THEORY OF EHRLICH: IS IT TENABLE?

BY

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The side-chain theory, socalled, is a hypothesis of "receptors,' bringing into play other bodies, each having a definite place and role in the phenomena of the human organism, such factor and role being used in interpretation of the problems which the organic functions create, and especially in regrad to infection and immunity.

The basis of the theory is cellular, and starts with the origin of the organic processes in the cells, essaying to find interpretation of the processes and functions and conditional problems in the chemic compounds and cell constituents, and their phenomena, which the theory accounts alike chemical.

This theory has been before the profession now for some years, presented officially by the author himself in the Herter Lecture Course at the Johns Hopkins University, a year or two ago. Hypotheses which had prepared the way, exploited during the last decade or over, have been utilized in the elaboration of this more imposing hypothesis.

This side-chain theory has been discussed quite largely in medical journals and even in popular literature (whether wisely or not is open to question, in view of the mere tentative nature of the hypotheses involved), and the matter is widely known, and receptor and haptophore, complement and antis of various kinds and grades, are finding ready currency, enlarging an already overstocked medical vocabulary.

Insofar as a non-German reader may be able to comprehend the complexities of the theory it impresses one as being highly ingenious. It is so elaborately hypothetic that one must pause and look for the facts for assurance that he is on safe ground. Still it throws much light upon the chemicophysics of the organic functions. Even here hypothetic bodies (immune bodies for instance), and of course functions consonant to these, are assumed and have to be given place and power in the processes and functions constituting the infection and immunity phenomena, the difficulty being to adjust these to the intracellular bioplasmic activities, and interpret the phenomena consistently with the facts. The fundamental and fatal error in the theory, as I shall endeavor to show, is in the nonrecognition of distinction in the chemical compounds of various kinds, and their processes, which are secondary products of the primal factor and phenomena—the cell constituents and the intracellular bioplasmic activities. These are all classed alike, primordial and secondary, and interpreted on the same basis of chemistry.

Professor Ehrlich's hypothesis of the assimilation of foods by the cells, "after chemical union has taken place between the food substance and some constituent of the cell protoplasm;" is made the basis of his theory. Assimilation is said to be but partially accomplished at this stage, and the further detail is the "splitting up of molecules of great size and complex chemical nature into simpler substances before entering into the composition of the protoplasm;" these are all simple and definite chemic processes, and should be facile of demonstration, as they would be in any chemic phenomenon not a part of living processes. The structureless bioplasm is the active, potential factor in these phenomena, a fact quite ignored in chemical explanations of the bioplasmic functions. What warrant is there in the actual facts for limiting the phenomenon of nutrient assimilation to a mere chemism? It does not interpret the phenomenon! The fundamental phase of it is untouched and unaccounted for. No interpretation of assimilation of proteids by the cell protoplasm on the basis of a simple chemism is adequate, even could such chemism be made evident.

When the aftercoming functions and phenomena, of which the assimilation and vitalization are the potency and promise, are taken into account, the inadequacy of the interpreting hypothesis is effectually damning to itself.

Whatever conception is formed of chemical processes as a phenomenon, whether it be based upon the atomic theory, as a juxtaposition of atoms and molecules, or, with the more recent view of the *materia prima*, the ionic and radioactive, and as a reciprocal saturation, or interpenetration of substance (T. Sterry Hunt), whatever view one brings to bear in his interpretation of the nutrient assimilative function, it is not a mere chemical process, it is not adequately interpreted as a "chemical incorporation of a grouping most closely related to some constituent of the cell, fitting as a key into a lock," as per the side-chain theory hypotheses. It is not that kind of a phenomenon in any sense. It is an *organic* process; it is not sectional, nothing is "fitted in" in any process in which the primal, the bioplasmic activities are the agencies. These are from *within out*. All coming into entity of tissue structures, all repair processes, to the replacing of a broken off receptor, are phenomena originating in life centers, and are from these centers outward. A fetus of eight or ten weeks (and less) is as perfectly formed as at birth, and the developmental processes are simultaneous throughout the whole organism, from the centers. Nothing analogous to a fitting-in process is suggested by any primordial organic phenomena, not even the "intussusception" of the nutrient proteids in animal, or the plant physiologic processes by which inorganic and elemental matters are transformed, marked up, into plant tissue and organisms. The fitting as of a key into a lock is entirely misleading in respect to the organic phenomena.

The author limits, and very correctly, assimilation to foods, defining the phenomenon as a chemical incorporation of molecules with protoplasm (to which I demur as being not consonant with the genius of the primordial phenomena). In the author's language. "we must assume that all substances which enter the structure of protoplasm are fixed chemically by the protoplasm. We have always distinguished between assimilable substances which serve for nutrition, and which enter into permanent union with the protoplasm and those which are foreign to the body. No one believes that quinin and similar substances are assimilated, that is, enter into the composition of the protoplasm. On the other hand, the food substances are bound in the cells, and this union must be considered chemical."

Now here are a commingling of facts which are correct, with assumed facts which are incorrect, because inexact, and which therefore render the position untenable. That only food substances are assimilated is a well-attested and recognized fact. That these substances enter into even comparative permanent union with the protoplasm of the cell may not be asserted, for nothing is permanent of the cell protoplasm in these phenomena but the bioplasmic *potentiality*. Constant change is the order here. Entering the substance of the cell protoplasm the nutrient proteid becomes living matter, but its life is short, it is surrendered when the tissue structures of the cell come into entity. The protoplasm is structureless, it is unwarrantable to assume that the proteid molecules enter into the structure of the protoplasm as a chemical incorporation, a fitting-in process, after the manner of all chemisms, inconsonant, as we have seen, with all primordial phenomena. This is a hypothesis of chemism founded upon an assumption, and as such readily granted. The fact of the double assumption must be recognized in rating the status of the theory. And in view of the incognate character of such phenomena to the general genius and character of the intracellular bioplasmic activities, the inexact conceptions as to permanency of the union of food substances with protoplasm, and the erroneous view of the vital processes as a *fitting-in* maneuver, the theory so based can give little promise, through lack of potency, of correct solution of infection and immunity problems.

Further, in the side-chain theory we are confronted with the assumption of "Union of toxin with receptor," an untenable conception, the receptor being a constituent of the cell protoplasm—what else can it be, as it stands in the theory? Now should the distinction be not marked (as it must be in any correct conception of the organic functions) between the active living matter and the secondary factors and phenomena, the product of the primal, and the status of the receptor be determined as a secondary product and factor, the phenomena in which it finds vogue being secondary to the primordial, my objection would not stand. The receptor as a chemic compound body, a product of the primal processes, its union with a toxin body would be chemically competent, under the dominance of the primordial agency, as in all organic processes. But as a constituent of cell protoplasm, its role and function, intracellular and primal, whatever place it has in the theory it has none in the intracellular protoplasmic activities as uniting with a toxin. The union of the nutrient proteid with the cell protoplasm is veritable in association and vitalization. Does protoplasm "unite" with any other substance than the highly, complexly elaborated nutrient proteid? I cannot believe it. Where are the facts to warrant the supposition, particularly with a toxin? Everything taken into an organism is either a food, or an excitant to vital action, or a toxin, which is excitant or depressant. The latter does not have to enter into union with the protoplasm for its deadly excitant or depressant action to be effective in damage or death of the organism, the specific action, lethal or less dire, being in response to the primal bioplasmic activities. On no other principle can the phenomena be rationally conceived or intelligibly interpreted.

Before attempting an elaboration of this fundamental fact and principle, in their bearing upon the side-chain theory, I would object to the unscientific conception of an "immune body," basing this objection upon the fact that the author's hypothesis gives to a factor, which is a secondary product of the primal, bioplasmic functions, and which operates in the secondary processes, the place and role of the primordial, the bioplasmic factor and process.

There can be no "immune" body in any correct view of organic phenomena. Immunity is a condition, potential of the organism as such, achieved or maintained by functions operated and made effective by the primary bioplasmic activities. The hypothesis of immune bodies, serums, drug factors, and "germs" having the power of originating or "curing" or giving immunity from disease, is utterly misleading. Patent medicine commercialism and its evils are the legitimate outcome of such conception.

All these are secondary factors, causal and adjuvant to the primordial process and functions in the infection or immune conditions and phenomena.

Some of the products of the primal processes, and of the secondary, in which the bioplasmic activities are the potential agencies, acting in the secondary phenomena, are irritant or stimulant to the primordial, being baneful or "laudable," in the chemical processes in which they are active, according as the primordial response to their factorship may determine. The more especially external factors, disease organisms, drugs, and general therapeutic agencies, find their role and are interpretable as stimulant, or otherwise, to the vital processes, being basic and potential to all the organic conditions and functions. What other place or role is there for an "immune" body? Socalled "germs," toxins, antitoxins, serums, and immune bodies carry neither infection nor immunity, in scientific medicine.

These are the prerogatives and achievement of the primordial organic processes, which may be influenced into the setting up of these infection phenomena, and modified and guided into immunity—condition and potentiality.

Infection and immunity, therefore, are inaugurated, originated and effectively created and maintained by the organism itself. There is no "germ" of disease, there can be no "immune body." These are incidental or otherwise causal and adjuvant factors in the organic phenomenon having the various designations.

The battle of the fundamental questions in the side-chain theory, as in all medical theories, must be fought out on the intracellular basis.

Organic chemistry, with its wonderful advances of recent years, gives much aid and throws much light on the chemisms inaugurated in the secondary phenomena, acting laudably in incitement and influence of the response in the primal and magisterail agencies in the organic functions, these chemistries being inaugurated and operated in interest of the therapeusis of the organic functions at the will of the truly scientific physician. But chemistry can only be operative in its own realm and sphere. It does not operate in, nor does its principles interpret the *primordial phenomena*. A distinction to be noted is evidenced in the primordial and secondary processes and functions which cannot be ignored. An organic potentiality, holding the balance and the effective power in the organism *as an organism*, the organic efficiency operating in the primal, in origination, and in the secondary processes throughout the whole organic phenomena. The fundamental organic potentiality and efficiency operate primarily *intracellularly*, and the bioplasmic activities are sovereign as the dominant agencies in all the organic phenomena, as I have repeatedly maintained during the past six or eight years. As a matter of scientific validity these primal, bioplasmic phenomena cannot be interpreted on a basis of chemistry of the nature and character which Michael Faraday stood for, denying "action at a distance," a position generally held in chemistry today.

Such attempted interpretation, as in the side-chain theory, is founded, as has been shown, on an inexact conception of the primordial organic phenomena. The statement is made that: "The phenomena of life are not found in the structureless matter,"[1] certainly an incorrect position to assume, scientifically, for as a matter of fact the life phenomena are found no where else. The gross phenomena (organic) are seen in the ostensible physics and chemistry, but these are secondary as factors and processes, of the products of the primal or vital or "living" activities. There are only life phenomena in the secondary and subordinate sense. So that the only "life" phenomena, strictly speaking, are found in the structureless matter. All the chemisms are effected by the secondary factors, whether intracellular or intercellular, the secondary products of the primal. "Physiologic digestion is a matter of pure chemistry" (H. W. Wiley) with the proviso, by dominance and effective agency of the bioplasmic activities of the cells of the tissues and organs implicated. All the secondary phenomena may be understood and interpreted on a basis of physicochemistry with the proviso mentioned; but the primal phenomena, potential in the secondary, are of a different kind. They are veritably "life phenomena," unique in themselves, and not interpretable save in recognition of these fundamental facts.

The side-chain theory is elaborated in nonrecognition of these facts. And while a model of complex ingenuity, interpreting in masterful way much of the ostensible and secondary functions and phenomena, it leaves the primordial processes and functions uninterpreted. It also gives countenance to a system and method of manipulation of the vital processes by use of serums and organotherapy fraught with danger, particularly as regards after consequences, which to my view is appalling unless under guidance and control of the highest scientific and conservative knowledge and skill.

Put the correct central orb—the primordial bioplasmic activities and potentiality—as the originating and dominating body in the organic and the medical system, as the basis of interpretation of the phenomena, and interpretation will be comparatively facile, and medical manipulation effective, the former of infection, the latter in achievement of immunity, the goal of scientific medicine.

Summary of Typhus Fever in City of Mexico.—From October, 1905, to June 30, 1906, there has been a total of 4,174 cases and 992 deaths from the disease in the Federal District.

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[1] See address of President of Section Physiology, British Association for the Advancement of Science, 1904.

DIGEST OF LITERATURE.

A CRITICAL REVIEW OF THE TECHNIC OF PERINEAL PROSTATECTOMY AND MORTALITY.

BY

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Perineal prostatectomy for the removal of the entire prostate gland or portions of it, has been done for a much longer time than the same operation by the suprapubic method. As far back as 1834, Guthrie advised excising portions of the prostate by way of the perineum in cases where the gland still protruded after removing what could be seized after opening the urethra. At about the middle of the last century it not infrequently accidently happened, especially during the removal of vesical calculi through a perineal incision, that the operator came across a prostatic lobe in the bladder which was obstructing the vesical opening, and then and there removed this obstructive mass, either partially or totally. Such cases have been described by Fergusson, Bryant, Langenbeck, Dittel, Landerer and others.

Now, since in several of these cases a considerable improvement arose in the passing of urine, a number of the above mentioned surgeons advised this method which was much less dangerous than the method of excision then in use, where portions of the prostate were removed by way of the urethra with the instrument devised by Mercier. The method rapidly found favor, more particularly in America and Germany and of recent years it has undergone a very marked development in France, particularly from the efforts of Gosset and Proust (Annales des mal. des organes génito-urinaries, 1900) and Albarran (Zentralbl. f. Harnorg., 1904). A number of the various technic has been published concerning this operation, all of which have this in common, namely, that the incision is carried down between the bulbous urethra and rectum until the prostate is reached. Aside from the various skin incisions, the variation consists especially in that some operators desire to protect the urethra and prefer partial removal or resection of the lateral lobes, whereas others do not consider opening the urethra of any importance or even open it deliberately.

Czerny (Völker, Archiv f. klinische Chirurgie, 1903) and the Heidelberg school open the bladder, while, on the other hand, Albarran incises the urethra, but gives a warning note against injuring the neck of the bladder. Longfellow (Zentralbl. f. die Krankh. der Harn u. Sex. Org., 1904) proceeds most radically and does not hesitate to remove the entire prostatic portion of the urethra as is occasionally practised by Freyer, who claims that he has never seen any unfavorable results accruing from it. For these modifications in perineal prostatectomy the motto "quot capita, tot sensus" may be truly applied. Von Dittel (Beiträge zur klin. Chirurgie, 1895) who was among the first to perform this operation was decidedly in favor of protecting the urethra. The patient being placed in the abdominal or lateral position, an incision was made from the tip of the coccyx down to the anus in the median line, and then a second curved incision, carried to the right around the anus, to the perineal raphe was made. A thick tampon was placed in the rectum while a stout catheter was inserted in the urethra. Then he dissected down between the bulbous urethra and rectum to the prostate, exposed the organ and excised portions of the lateral lobes. He endeavored to completely avoid the middle portion through which the urethra runs. The perineal wound was then packed. When von Dittel published his method, lateral prostatectomy had only been attempted on the cadaver and Küster (Archiv f. klin. Chir., 1891) was the first to carry this operation out on the living. Nienhaus collected 11 cases in 1895 which were operated on according to von Dittel's method by von Dittel himself, Küster, Schede and Socin; the latter surgeon had introduced the skin incision recommended by Koch, which is a curved one, commencing at the anus and extending to both tubera ischii. In 10 of these cases normal micturition was established; three died later on, two from carcinoma and one from hemorrhage of the bladder two years later, so that the operation cannot be considered as the cause of any of these deaths.

During these operations it was ascertained that in older people an extensive detachment of the rectum from its fairly firm attachments with the posterior surface of the prostate very readily resulted in disturbances of the nutrition of the rectal wall, made evident by necroses and fistulæ. A rectal fistula occurred in one case from this cause and it should be pointed out that the danger of rectal fistula is an inherent disadvantage in all technic of perineal prostatectomy. Among the 11 cases of von Dittel's technic, where the urethra was carefully protected, the urethra was injured in six, once the bladder and once the rectum. In one instance necrosis of the rectum occurred later. From these injuries there resulted six cases of urethroperineal fistula, one case of rectoperineal fistula and one case of urethrorectal fistula; four of these fistulæ remained permanently.

As these results were not very encouraging, a modification of the technic was given by Nicoll (quoted by Mansell-Moullin, The Lancet, 1894). He suggested first doing a suprapubic cystotomy and from the bladder to push the prostate downwards into the perineal incision. MacEwen also followed this technic. The von Dittel operation, which has undergone numerous changes since it was first described as far as the skin incision is concerned, certainly presents many considerable disadvantages. It can only be effective in accomplishing its result if the principal obstacle to micturition is represented by very greatly hypertrophied lateral lobes; it in no way protects the patient against recurrence, and lastly the urethra is frequently injured involuntarily, whereby the edges of the rent in the latter are irregular and may possibly become increased in size, a thing which does not occur when the urethra is incised with a knife. There is one advantage, however, in the operation, namely, the ejaculatory ducts are preserved, so that sexual impotency is prevented.

Among the more recent improvements may be mentioned that put forward by Rydygier (Zentralblatt f. Chirurgie, 1904). He upholds that the urethra should not be injured because the operation is rendered much more dangerous and he accounts for the unsatisfactory results of other surgeons from the fact that they do not observe this point. By a sagittal incision in the raphe, extending from the scrotum down to the anus, he reaches the prostate and splits the capsule a little to the side of the median line in order to avoid the urethra with greater safety. He does not consider it at all necessary to remove the entire prostate and strongly recommends leaving the glandular portions around the urethra. If this is done the loss of sexual power is not to be feared, which he considers of no mean importance, even in old men. Rydygier is of the opinion that operation in the early stages of the affection is proper and if performed as he describes he thinks it is not dangerous, while the earlier one operates the more surely are the bladder and kidneys protected from the injurious results of retention of urine.

Riedel (Deutsche med. Wochenschrift, 1903) has expressed similar views and recommends the following procedure. A curved incision, two fingers, breadth above the anus, extending from one tuber ischii to the other; then another incision is carried perpendicularly to the apex of the scrotum, so that a T-shaped incision is formed. Then one proceeds with care to the deeper structures, especial care being taken in the protection of the anterior rectal wall. When dissecting upward toward the scrotum the bulbous urethra necessitates great attention. The small perineal muscles are cut through and soon the pars nuda of the urethra come into view; a stout sound is passed as a guide and the prostate is gradually exposed. The sound is then removed because it pushes the prostatic urethra, which usually lies close to the posterior wall of the prostate, too far backward, whereas the lateral lobes which are to be seized disappear downward on both sides. After the sound is removed dissection is carried up on the sides of the prostate in order to obtain a complete view of the lateral lobes from behind. At a point about 1 centimeter and a half from the median line the capsule is split longitudinally on the left in its entire length and then with a small and very sharp curet the organ is removed piecemeal, during which process the capsule is grasped with long toothed forceps and pulled toward the median line. If the lobe is very large much patience is required and frequently portions of it must be removed with the scissors, especially so if any adhesions resist the curet. If a considerable loss of substance has been accomplished in the left lobe, for example the size of a walnut or a small apple, the right lobe can then be more easily drawn forward, being grasped with stout forceps, and then one proceeds as before in dealing with the left lobe. This surgeon advises the introduction of a soft rubber catheter in the urethra during the operation. He states that hemorrhage is usually slight and can always be controlled by packing with gauze. In the five cases which Riedel published, excochleation was easily accomplished with a sharp curet and it would appear that he was dealing with the softer forms of prostatic hypertrophy.

Although Riedel was desirous of protecting the urethra he nevertheless opened the canal in two cases, from which fistulæ resulted and remained open for several weeks after the operation. In other respects the results appear to be satisfactory. Of the five patients one died four months later as a result of a suprapubic cystotomy, necessitated on account of a very bad malformation of the bladder, so that this fatal outcome may be attributed to the technic of the prostatectomy. At the German Surgical Congress of 1905, Riedel emphasized the fact that he protects the urethra chiefly from the fear of incontinence.

At the same congress Küster referred again to partial prostatectomy which he believes is not dangerous and is quite sufficient, especially if care is taken to avoid injury of the urethra. It is quite evident that in partial prostatectomy a recurrence can occur and on account of the short time elapsing since the operation has been introduced no practical results can be made evident, but I would point out that Riedel makes light of the danger of recurrence when he says: "In younger men I should be inclined to advise the operation even though there is danger that the effect of the operation may be lost after the lapse of a few years, that the prostate will grow again, a circumstance which must always be taken into consideration. It would be a simple matter to resort to the operation again after the lapse of a number of years."

It seems to us a useless procedure and a very complicated one, so that we believe that total extirpation should be always undertaken, thus making a recurrence an impossibility.

The opinions of Czerny (Münch. med. Wochensch., 1905) and of the Heidelberg school differ very greatly from those expressed by Riedel relative to the treatment of the urethra. The technic employed at the Heidelberg clinic is, according to Völker (Archiv. f. klin. Chirurgie, 1903) as follows: "The patient, in the Trendelenberg position, a curved incision in front of the anus is made; then blunt dissection down to the prostate with isolation of the rectum which is held backward with a broad retractor. The capsule of the prostate is split in the middle line and the incision deepened in the anterior portion of the prostate as far as the beak of the sound which has been introduced into the urethra, after which the urethra is opened. Then the lobes of the prostate are enucleated by blunt dissection." Völker especially emphasizes the point that the operator should remain strictly within the capsule and thus prevents a transverse tear of the urethra. After enucleation of the lobes there is an open fissure in the urethra but its upper wall is preserved. This, according to Völker, can easily be reached because only a small amount of hypertrophied prostatic tissue lies in front of the ureter. If a lobe protrudes into the bladder it is usually drawn down along with the lateral lobes, but if this should not occur it is to be removed separately. As this tumor protruding into the bladder is firmly adherent to the mucous membrane of the organ, a defect in the bladder wall must of necessity result. "If the operation is correctly performed a slit in the lower wall of the prostatic urethra results when the interference is completed, likewise in the vesical neck, the edges of which are somewhat irregular, but the continuity of the parts is preserved." (Völker, *loc. cit.*) The urethra and the bladder incision are then sutured, excepting for an opening sufficiently large for the passage of a drainage-tube. The perineal wound is then plugged with gauze. The duration of the operation should be about 15 minutes. At the end of from six to eight days the drainage-tube is removed and a temporary catheter inserted. The lumen of the urethra is kept patent by passing large sized sounds.

Of 11 cases which were operated on in this way, two died. In one case a malignant tumor of the prostate was found, which was adherent to the rectum with the natural result that the latter organ was torn during the operation; a sinus formed from which the patient ultimately died. In two other cases the rectum was also injured, in one case a permanent fistula between the rectum and urethra resulted, in the other case a rectoperineal fistula developed. Völker is of the opinion that these operative accidents can be prevented by an improved technic. In the remaining patients the results were good and it is worthy of note that in one case, the evening following the operation suprapubic puncture had to be resorted to on account of the impossibility to pass a catheter. To prevent similar occurrences it is advisable either to insert a temporary catheter at the commencement of the operation, or to keep open and drain the bladder, likewise the opening in the urethra.

Zuckerkandl (Wiener klin. Woch., 1903) agrees with Czerny in that all cases the urethra should be opened. He pays particular attention in preserving the urethra in its entirety. After removal of the gland he trims down the capsule, likewise the dilated urethra, inserts a temporary catheter, suturing the urethra over the latter.

Gosset and Proust (*loc. cit.*), who have most carefully studied the topographic anatomy of the operative region, called attention to the very great importance of a musculo-aponeurotic structure, which extends in the form of a thin membrane above the deep transverse perineal muscle and the attachment of the levator, from the anterior wall of the rectum to the prostate and is closely attached above the bulbous urethra. This muscle should be transversely separated between two clamps closely behind the bulbous urethra in order to reach the prerectal space and thus easily attain the prostate. After freeing the capsule they split the prostate in the median line and separate the urethra from the membranous portion down to the bladder. Through an opening in the urethra a finger is inserted into the bladder, pulls the gland downward, loosening it from its capsule. It is then enucleated. In completing the operation they close the urethra with sutures.

Von Mikulicz (sevety-sixth Versamml. der. Naturforscher u. Aerzte.) makes an incision in the raphe. He then resects a portion of the posterior wall of the urethra, but endeavors to preserve the neck of the bladder and sphincter as far as possible. He employs Young's tractor in pulling the prostate forward. The operation is completed with drainage through a catheter and a tube in the bladder. According to this surgeon the functional results obtained have been good.

Albarran (Zentralbl. f. d. Krankh. der Harn. u. Sex. Organe, 1904) also emphasizes the fact that injury to the neck of the bladder must be avoided. He fixes the prostate with forceps and cuts it away piecemeal. He pulls forward with the finger introduced in the bladder that portion of the gland lying underneath the bladder and also removes it with the scissors. Larger pieces are removed by blunt dissection. If digital examination reveals an enlargement of the socalled middle lobe, the latter is either pushed down into the wound, or the vesical mucosa covering it is incised, after which the lobe is enucleated. This surgeon closes the incision in the urethra leaving space enough for a drainage-tube, after having trimmed down the superfluous portion of the dilated urethra.

Longfellow (quoted by Bako, Zentralblatt f. Krankh. der Harn. u. Sex. Org., 1904) dissects down through a median incision, opens the bladder without isolating the rectum and prolongs the incision from the bladder into the membranous urethra. After removing the sound introduced as a guide, he slides the finger into the wound and with the other hand over the symphysis he pushes the bladder downward, after which the thighs are flexed upon the abdomen and chest as far as possible. The prostate is then enucleated with the fingers. The prostatic segment of the urethra is completely or partially removed, as is also done by Freyer in his suprapubic method. By this technic Longfellow claims that he has had no unfavorable results while the membranous urethra becomes directly adherent to the neck of the bladder. He does not believe that stricture will result and finds that the functions of the bladder are carried out perfectly. He points out the particular advantage of his method in that no time is lost in exposing the rectum.

Young (Journ. of the Am. Med. Assoc., 1905), who terms his method conservative, also opens the urethra. He considers his good results due to the use of his tractors. He operates frequently under spinal anesthesia as follows: The patient is placed in an extreme lithotomy position so that the perineum lies horizontally. A sound is then passed into the urethra. In thin patients he makes an incision in the raphe about 6 cm. in length carrying it as near to the anus as possible, while in corpulent subjects he prefers an inverted V incision, the sides of which are about 5 cm. in length. Taking special care of the thin socalled rectourethralis muscle, which he incises transversely, the membranous urethra is exposed and opened, after which the tractor is inserted. This is turned 180° in the bladder and the prostate is pulled down until it reaches the surface of the incision. Then, carefully protecting the ejaculatory ducts, the capsule is split and the gland peeled out by blunt dissection, great care being taken not to tear the urethra. When the lateral lobes have been enucleated, the tractor is turned in such a way that any existing middle lobe is brought forward into the wound, which in its turn is enucleated. The bladder is drained and irrigated continuously with a physiological salt solution. The wound is packed with gauze and the skin incision partially sutured. The bladder should be drained for a week, especially when it is infected. The patient is allowed to be placed in a rolling chair on the third or fourth day after the operation and it is considered very important to let him drink freely of water in order to thoroughly flush the kidneys. He does not insert a permanent catheter. Of 75 patients operated upon, Young only lost three. Sexual power was apparently preserved in 15 of them, while all presented good functional results. He, however, is unable to report on the durability of the results, because all these operations were performed in the years 1904 and 1905.

It is worthy of note that Fowler (Zentralblatt f. Chirurgie, 1905) has observed paralysis of the sphincter after using Young's tractor, and for this reason he has given up its use.

Squier (Zentralblatt f. Chirurgie, 1905) has had two deaths out of a total of 21 perineal prostatectomies. In one case he unintentionally removed the entire prostatic portion of the urethra, but excellent functional action of the bladder resulted and a year later there was no evidence of stricture formation. In two patients the ejaculatory ducts were removed and what is most curious to note is that their sexual desire was retained.

Leper Colony Holds Election.—The Bureau of Insular Affairs has received reports of an election recently held on the Philippine island of Culion by the leper colony for the choice of a presidente and "consejales," or councilmen. The lepers also took occasion at the time of this election to formulate resolutions thanking the Philippine Government for the excellent quarters it has provided for them on the island.

ORGANOTHERAPY IN BASEDOW'S DISEASE.

BY

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The first reference to the toxicity of the thyroid secretion is said to be in the Talmud but it is only in recent years, since the study of the internal secretions of the various glands, that the theory of thyroid intoxication has been advanced to explain the symptoms of Basedow's disease. Möbius considers that the majority of the symptoms is due to hypersecretion of the thyroid gland and he compares the symptoms produced by a hyposecretion of the gland as in myxedema with those of Basedow's disease, showing the almost constant antithesis in the two diseases.

The epithelial hyperplasia of the thyroid gland or the increase of its secreting surface is the anatomic foundation for the theory of hyperthyrea; the cause of this epithelial hyperplasia being probably due to an external excitation or series of excitations reacting on the gland, thereby causing an exaggeration of its function or a primary disease of the gland of an infectious or toxic origin.

The view that the disease is the result of hyperthyrea is confirmed by cases on record in which patients have shown symptoms of Basedow's disease after ingesting large quantities of thyroid. In 1894, Bectère reported the case of a patient, with myxedema, who was given large doses of thyroid gland for some time with the result that tachycardia, elevation of temperature, insomnia, agitation, polyuria, albuminuria, incomplete paraplegia, increased respirations, sensations of heat, exaggerated perspiration, tremors, slight exophthalmos, and staring were produced. Notthaft reported a case in which the patient took large doses of thyroid for obesity. In this case the resemblance to Basedow's disease was so marked that the diagnosis was made before the real cause of the symptoms was discovered.

Excessive thyroid feeding produces a condition which resembles Basedow's disease very closely. That excessive thyroid secretion is an etiologic factor in the disease is highly probable but the primary cause of the hypersecretion must be considered. Continued excitations of the gland, as in frequent pregnancies, is an undoubted cause, producing the epithelial hyperplasia which is the characteristic anatomic condition of the gland. Girls at puberty during belated or delayed menstruation often show the cardinal symptoms of Basedow's disease which disappear on the administration of thyroid or when menstruation is fully established. The fact that these patients improve under thyroid treatment seems to prove that the symptoms are not due to increased thyroid secretion but possibly to a chemical perversion of the secretion. At puberty, the thyroid develops very rapidly prior to the first menstrual period, and before each subsequent period there is an enlargement with presumably increased secretion, so it would seem probable that cases would develop at this period. The majority of them are often typical but disappear in a short time. There are cases, however, of true Basedow's disease appearing at puberty usually in very large well-developed girls whose periods may have begun at 11 or 12 years. These cases are very obstinate, often passing into a maniacal condition requiring asylum treatment.

It is probable there are several conditions which will produce hypersecretion of the thyroid gland. Thomson claims it is due to a toxemia of digestive origin, and treats his patients with blue mass and strict dieting. Irritation of the cervical sympathetic has also been claimed as a cause. In some few cases in which the nerve was resected the patients have been cured or their condition improved.

In 1894, M. M. Ballet and Enriquez experimented upon animals in three ways: (1) Transplantation of the thyroid gland into the abdominal cavity of dogs; (2) feeding dogs with large quantities of sheep's thyroid; (3) the subcutaneous injection of thyroid extract. Transplantation of the thyroid produced considerable loss of flesh, polyuria and albuminuria, which disappeared in about 8 days. Thyroid feeding produced hyperthermia, increased pulse, a period of excitement with crises of trembling and dyspnea. In one case distinct exophthalmos, later digestive troubles occurred with bloody stools. No modification of the size of the gland was observed, the animals recovered in a few days. The subcutaneous injection of thyroid extract gave more positive results. Beside the foregoing symptoms, which were intensified, there was a distinct enlargement of the thyroid gland. On histologic examination this presented the usual lesions found in Basedow's disease, viz., obliteration of the enter lobular lymphatics with excessive development of the perilobular lymphatics, and the substitution of granulation tissue in all the lobules.

Edmunds has also reproduced by thyroid feeding many of the symptoms of Basedow's disease in monkeys and rabbits. The experiments show that a certain number of the symptoms of Basedow's disease can be produced by thyroid feeding, viz., active inflammation of the gland, sclerotic transformation of the gland with complete destruction of the alveoli and epithelial cells. The disease could therefore be considered as a functional exaggeration of the thyroid gland caused by an infection or toxemia acting on the nervous system which secondarily provokes hyperthyrea and the minute lymphatic lesions described by M. Renaut. The sclerotic changes in the gland explain those cases of Basedow's disease which pass into myxedema as well as the antithesis of the symptoms of the diseases.

If the thyroid secretion be considered as an antitoxin, the function of which is to neutralize or oxidize certain toxins formed in the body, and that any excess of thyroid secretion over the amount of toxin formed produces symptoms of Basedow's disease, then, if sufficient toxin be administered to neutralize the excess of secretion, the symptoms should disappear. Working on this hypothesis, M. M. Ballet and Enriquez injected the blood-serum of thyroidectomized dogs into nine patients suffering from Basedow's disease, repeating the injections at intervals of three, five and eight days according to the reactionary symptoms of the patient. The initial dose was 4 cc., increasing gradually to 15 cc., each patient received about 50 injections. Two of the patients developed tetany, tinnitus aurium and vomiting. These results would seem to prove that the symptoms of tetany so often seen in thyroidectomized animals are due to some poison in the circulation. Generally speaking improvement occurred in all the nine cases. In the seven in which goiter was a permanent symptom, the neck decreased 2 to 6 cm. in circumference, the tremor diminished in all cases, the pulse was reduced 20 to 30, on the day following the injection, the exophthalmos, which was present in three of the cases, showed progressive amelioration, especially in two cases.

In 1899 Burghart utilized the serum from a subject of myxedema causing some improvement. Burghart and Blumenthal obtained serum from eight thyroidectomized dogs, to this they added alcohol and physiologic salt solution producing a precipitate which they pulverized and administered in doses of 1 to 5 gm. They also gave liquid serum in doses of 15 to 20 cc. Three of the patients showed improvement, in one the symptoms were aggravated after cessation of the treatment.

Otto Lanz, in 1899, conceived the idea of utilizing the milk of thyroidectomized goats. He obtained favorable results after several weeks' treatment, tachycardia was reduced, goiter diminished in size, tremors reduced, appetite became normal, and insomnia disappeared. One patient showed marked improvement after eight days of treatment but relapsed on discontinuing the milk. Burghart and Blumenthal also obtained good results with goat's milk and by precipitation obtained a powder from the milk which was active, giving as good results as the injection of blood-serum.

Goebel of Bielfeld attempted to analyze the milk for iodin in organic combination arguing that in thyroidectomized animals the milk should contain less iodin than normal milk. The quantities obtained, however, were too small to draw any conclusions. He found the serum more active than the milk.

Möbius administered the dry thyroid gland from a cretinic goiter and found a slight improvement. He also used the blood-serum with good results.

The serum of thyroidectomized dogs, sheep and of subjects of myxedema, the milk of thyroidectomized goats, the powdered flesh of thyroidectomized sheep, and the powder of cretinic goiter have all been used in the treatment of Basedow's disease producing improvement in some cases but no cures. Recently thyroidectin, the dried serum of thyroidectomized animals, has been placed upon the market. In two cases in which I tried it the results were not encouraging, others, however, have been more successful. So far the serum and milk treatment of Basedow's disease cannot be recommended from the results obtained.

The operation for removal of the thyroid gland has found much favor recently but the mortality is high, and, as a rule, the results have not been satisfactory.

My experience has shown that strophanthus and digitalis in reasonable doses will control the cardiac symptoms, while dissected suprarenal gland, blue mass, aristol, or lugol solution seem to have a marked effect upon the general condition. However, no treatment has as yet been brought forward that is entirely satisfactory.

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REVIEW OF RECENT LITERATURE IN DERMATOLOGY.

BY

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Scrofula.—The infrequency with which the term scrofula is employed in medical literature, except as a synonym for tuberculous lymphadenitis is so great that when the term is used, we are disposed to criticize. Students of the present day are taught to regard it as a term of the past since the accepted views of its pathology place the conditions among the affections produced by the tubercle bacillus. Occasionally, however, some observer has sufficient courage to present his convictions to the contrary, but seldom does it happen that these convictions withstand close investigation. In a recent paper under the heading "Scrofula" (Illinois Medical Journal, May, 1906), H. G. Anthony, of Chicago, presents his views of the subject, which seem to have many points in their favor. It is to be regreted, however, that this term which has caused endless confusion, should be again given such prominence. This does not detract from the value of the paper, fortunately.

The contention throughout this paper is, that the condition known as scrofula is not tuberculosis but rather a condition of chronic pyogenic infection. This agrees with the views expressed years ago by Henoch and Baginsky. He shares the opinion of Cornet that the condition is one of chronic staphylococcus or streptococcus infection, and that no specific microorganism is to be found in connection with it. Anthony does not believe, as do many writers, that heredity plays any part in the production of the disease. In this connection he makes several remarkable statements. For instance, he says where there are several children in a family, it is rare to observe more than one affected with this disorder and also it is rare to obtain a history of the same disease having been present in either of the parents during their childhood. Cases of chronic pyogenic infection of the nose and throat, he further states, may be observed in which the local lesions have entirely disappeared, leaving distant skin and eyelid lesions to dominate the clinical picture. It would seem as though this writer were endeavoring to present a picture of a condition which requires considerable skill to differentiate from tuberculosis, and this he concedes when he states that where scrofula, or, more properly speaking, chronic pyogenic infection of the nose and throat, is present, tuberculosis readily becomes engrafted, and that it cannot be determined in a given case, when this second infection has taken place. It is the observation of cases in which tuberculosis has become engrafted, he says, which causes many clinicians to believe that scrofula is nothing more than tuberculosis.

According to his views, chronic pyogenic infection of the nose and throat constitutes scrofula and may exist independently of tuberculosis, although at times they are combined. This infection gradually invades the cervical, thoracic, and abdominal lymph-glands; it passes through the eustachian tube into the ear, and then through a perforated drum and external auditory meatus until it comes in contact with the skin near the external ear, producing impetigo. It may extend to the bronchial tubes. The eyes and skin, he says, may become infected by nasal and throat secretion, often carried to distant points by the fingers. This he declares to be the proper conception of scrofula.

In considering the symptoms of the affection, he states that contrary to most writers, his observation has shown the disease most often in well-nourished children and those with good appetites, sometimes voracious. Scrofulous children often take cold easily and the complexion is frequently clayey. The symptoms are never alike in any two cases. The eye manifestations include certain kinds of blepharitis, phlyctenular conjunctivitis and forms of keratitis, all of which Anthony thinks are produced by inoculation of microorganisms contained in nasal, ear or mouth secretion being carried into the eyes by the fingers.

Concerning the cutaneous eruptions in scrofula, he states emphatically that scrofuloderma is subcutaneous tuberculosis; it has nothing to do with chronic pyogenic infection of the nose and throat, and may develop in any part of the cutaneous surface. He believes that this term "scrofuloderma" should be dropped entirely and the expression "subcutaneous tuberculosis" used in its stead. In referring to erythema induratum scrofulosorum, he believes that it is confused with subcutaneous tuberculosis only by those who fail to follow closely Bazin's original description. The condition is one of fat atrophy and not a form of tuberculosis, according to Anthony, and may be due to toxins derived from chronic pyogenic infections of the nose and throat.

In his remarks bearing upon lichen scrofulosorum, he states that this condition is one of the many cutaneous manifestations of tuberculosis, which is associated with a distant focus of tuberculosis. He is disposed to regard this tuberculid as a tuberculous toxemia. Chilblains, he thinks, are caused by tuberculous toxins and when present in cases of scrofula, they indicate the presence of an engrafted tuberculous form of the disease. Excessive cold perspiration is a condition, according to this observer, often seen in scrofulous children as the result of pyogenic nose toxemia and may persist through life. Granulosis rubra nasi, a condition resembling acne rosacea, but occurring in childhood; impetiginous eruptions and certain forms of eczema he ascribes to chronic pyogenic infection of the throat and nose. He also remarks that a nontuberculous bronchitis is not uncommon in scrofula.

In summing up the various points of this paper it would seem, according to Anthony, that there are two kinds of scrofula, simple and complicated; the latter being complicated with tuberculosis. The former would include nontuberculous lymphadenitis, certain ocular conditions, especially blepharitis and phlyctenular conjunctivitis, erythema induratum, excessive cold perspiration and granulosis rubra nasi, impetigo, eruptions resembling varicella, certain types of eczema and a kind of chronic bronchitis. The complicated variety of scrofula is that in which certain manifestations of tuberculosis due to the toxins of the tubercle bacillus become engrafted upon the simple form. This embraces the cases in which tuberculous lymphadenitis, scrofuloderma or subcutaneous tuberculosis, lichen scrofulosorum and other tuberculids, chilblains, etc., are observed. Even in the face of an argument such as this from such an authority, it would seem best to allow the term scrofula to rest undisturbed in the oblivion to which it has been consigned by the modern writers and teachers. The substitution of the phase "chronic pyogenic infection of the nose and throat" would perhaps be a step forward, if it is to be conceded that a nontuberculous variety of these various affections really exists.

Leprosy in Cape Colony.—Black, R. S., Cape Colony (The Lancet, April 28, 1906), in a series of remarks on this subject states that when this land was first colonized by Europeans toward the latter part of the seventeenth century, the aboriginal races who met the invaders at the southwestern extremity of the continent were the Hottentots and the Bushmen, and he has not been able to find satisfactory evidence of any weight to show that leprosy was present among these races. The nomadic habits of these people precluded their being subject to this disease. The spread of leprosy in this country, he shows, has been from the southwest to the northeast, following the track of the new civilization which has progressed in that direction. The earliest cases he traces to the early days of the Dutch Colonization when many servants and slaves were brought from the East, especially southeastern China. Concerning the prevalence and increase of the disease, he says, in 1891 there were 262 lepers and in 1904, 1,230 lepers. The European increase was 15 percent, and in other than Europeans 25 percent. The Hottentots and mixed races have the highest leprosy rate, the Europeans the lowest, while the Kaffirs occupy an intermediate position. The increase in the population during the period was only 57 percent against 81 percent increase in leprosy. He does not believe that this extension of the disease is due to any particular form of diet or racial, hereditary, or climatic tendency. He scouts the idea of fish as an etiologic factor. The Europeans are prone to develop the nodular or mixed variety while the natives usually present the macula-anesthetic type of the disease. Tuberculosis is a common complication in the latter form. The lower animals that live near or in leprous colonies never contract the disease. His experience with the treatment of the disease was on a par with that of other observers. Chaulmoogra oil seemed to be productive of most benefit. The utility of the röntgen-ray in this disease, he thinks, is doubtful.

Subcutaneous Nodular Tuberculids.—Winkler (Arch. f. Derm. u. Syph., Bd. 72), in a discussion of the relationship between "Sardico" of Bock and the subcutaneous nodular tuberculid of Darier describes a case occurring in a very robust man which began insidiously in different parts of the body and pursued a very chronic course. In the region of the buttocks the disease was especially well marked and was manifested by hard, indolent, cutaneous and subcutaneous nodules. There seemed to be no change in the skin surface covering these nodules. They were noticed to grow peripherally, some attaining the size of the hand and nearly all tending to form cake-like plates as grew. As the growths increased in size it was observed that the upper cutaneous surface became lighter in color at first but later the skin assumed a dark brown or even brown-red tint. The cutis still later formed folds, the center of which was somewhat depressed in many instances, becoming grayish blue and then changing to grayish white in color. The peripheral infiltration extended outside of the discoloration. With the onset of involution many yellowish brown easily depressed spots appeared. On the surface of the cutis in places, there were localized groups of lesions resembling those of lichen. Histologically it was noted that the nodules were made up of giant cells, epithelial cells, and round cells, in some places showing a central necrosis as in a tubercle. Apparent cure was brought about by the internal administration of arsenic.

Multiple Neurofibromatosis with Atrophy.—Pollak (Arch. f. Derm. u. Syph., Bd. 78) describes a case seen in Kreibich's clinic in Graz, in which all the symptoms of Recklinghausen's disease were well marked. There were irregularly scattered tumors of the skin, and tumors of the nerves symmetrically arranged. Bluish spots were present on the skin in which the smallest tumors were situated. In addition there were also elephantiasis mollis neuromatosa on the thigh, pigmented nevi, and depigmented spots described by Merck as leukoderma atrophicum. Pollak examined these leukodermic spots and believes that the change is not one of true atrophy but rather dependent upon the diseased condition of the nerves and the absorption of the tumors.

Relation of Nerve Impulse to Cutaneous Inflammation.—McEven, L. E., Chicago (Jour. A. M. A., July 7, 1906), in a study of the role played by nerve impulses in the production of cutaneous inflammation has carefully analyzed every feature of the condition and concludes that the phenomena of inflammation cannot be produced by reflex action alone Direct motor impulse, he concedes, can produce dilation of the bloodvessels and secretion of fluid by the endothelium. It is possible that it may induce, indirectly, slowing of the blood stream, the margination of the leukocytes, and the readiness of passage of the latter through the vessel walls. Motor impulse, he states, has no direct relation to the migration of leukocytes and proliferative tissue changes and hence is not sufficient to produce inflammation unaided and alone. In his opinion, the factor necessary to supplement nerve action must embody the requirements of chemotaxis and this embodiment is found in external irritation which includes chemical, mechanical, thermal and actinic irritation. The irritation is largely chemical and may be furnished by the products arising from the degeneration or destruction of protoplasm, whether from trauma, perversion of trophic nerve influence, or disturbance of cellular nutrition, especially when these are toxic to living cells.

Therapeutic Value of Chrysophanic Acid in Dermatology.—Fox, C. J. (Jour. A. M. A. June 23, 1906), in an article with the headin.

just given, relates his experiences with chrysophanic acid in the treatment of certain skin diseases. He refers to some 65 cases of psoriasis in which it seemed to have exerted a specific power. From the clinical history he gives, of one case of psoriasis, it would appear that in this disease, he routinely prescribes internally phosphorous pills, gr. 1-30, three times daily, and locally chrysarobin ointment U. S. P., 10 percent, twice daily. This observer also records most remarkable results from its use in 114 cases of eczema. The history of one case is given and in this disease it seems he prefers the chrysarobin ointment mixed with benzoated lard in the strength of twenty grains to the ounce. In 35 cases of herpes circinatus, chrysarobin ointment, gr. xx to the ounce, was found to be extremely valuable. In 11 cases of sycosis, the results following the use of the drug were very gratifying. The possibility of the application producing a dermatitis is mentioned. The deleterious results are lessened by using the drug in a paste or in collodion. A weak chlorinated lime solution is said to remove the stains produced by the drug. Fox confuses chrysophanic acid with chrysarobin. The therapeutic actions are similar but the substances are derived from different sources and have different chemical tests.

RECENT EDITORIAL OPINIONS.

Journal of the American Medical Association.—MENINGOCOCCUS INFECTIONS: Careful studies indicate that cerebrospinal meningitis may be found to correspond to typhoid fever and pneumonia as regards localization and blood invasion. The meningococcus has by some observers been found in the blood in 25 percent of cases of meningitis and a few cases of pure meningococcal septicemia with no definite localization have been reported. The mode of entrance of the organism into the body appears to be through the nasal mucosa though it is probable that other portions of the respiratory tract are vulnerable. The localization of the organism upon the meninges cannot be explained by proximity to the nasal mucosa but rather as the result of a peculiar affinity of the organism for those structures.—A GREAT MEDICAL DRAMATIST: Henrik Ibsen as a young man studied medicine which no doubt enabled him to see deeper beneath the surface of manners and morals than did contemporary dramatists. Ibsen's "Ghosts" appears to be the putting upon the stage of a case of paresis; "Hedda Gabbler" presents the symptoms of a psychosis of pregnancy. The enthusiasm with which Ibsen followed out each of the types of mental disturbance depicted by him reminds one of a pathologist seeking for the cause of a diseased condition. Nothing in our modern literature will appeal quite so thoroughly to the physician as will Ibsen's works.—EXPERIMENTAL CANCER AND IMMUNITY: By the action of numerous observers, a most promising field for the investigation of cancer in mice has been opened. Ehrlich is investigating particularly the varying degree of individual resistance to cancer shown by different animals. Efforts to produce immunity have not been highly successful but results are sufficiently encouraging to warrant further efforts in this line.—THE PATHOLOGIC CAT: A Massachusetts judge has decided that the cat has no legal standing; for a long time the animal has been in discredit from a sanitary viewpoint. But the indictment should also include the dog, though the cat is more of an indoor animal. Every tamed animal has its malign gift to human beings. The cat is more easily disposed of, when contagion is suspected, than are most of the others It also renders good service in keeping down other more insanitary animals. So while condemning it, it is well to remember that in some respects civilization would be more insanitary without the cat.—DEFACEMENT OF NATURE BY NOSTRUM ADVERTISEMENTS: In view of the passage of the Pure Food Bill it would possibly be asking too much to demand that an esthetic touch be added but it would be a blessing if the patent medicine advertising signs did not stare us in the face from every point of vantage. The government has taken in hand the preservation of the surroundings of Niagara Falls and it would be well if State and local authorities would prevent the disfigurement of natural scenery by nostrum and other advertisements.—EXTRADURAL BLOOD CLOT IN BURNED BODIES: Recent observations indicate that accumulations of blood outside the dura may be found in burned bodies that have been subjected to no violence, being part of the results of the action of heat upon the head. Harbitz doubts that these accumulations are altogether postmortem in origin and suggests that they may be vital or agonal, due to inflammatory or exudative changes; at any rate they are due to the action of the flames. The practical significance is that extradural accumulations of blood in burned bodies are not hastily to be attributed to trauma.—COMPARATIVE FREQUENCY OF DISEASES HERE AND ABROAD: A few years ago the common teaching was that certain diseases were much more frequent abroad than they were in this country. Investigation in at least two, gout and diabetes mellitus, has shown that such opinion and teaching were not founded on facts. Corresponding improvement in methods of observation seem now about to eradicate another false impression with regard to multiple sclerosis which until the recent work of Collins and of Taylor was regarded as a very rare disease in this country. The cardinal symptoms, scanning speech, nystagmus, and intention tremor, are now recognized as all being absent in some cases of the disease.—CYSTIC KIDNEY AND LIVER: Several theories have been advanced to account for this condition, the one probably most in favor now being that of developmental malformation. The feature of particular interest is that the disease possesses a marked hereditary and family tendency. Knowledge of this tendency may prove of value in diagnosis in obscure cases of cystic kidney.—FOREIGN-BORN LEPERS AND THEIR TREATMENT: An unfortunate leper from West Virginia seems to have been rather harshly treated. There is room for improvement in the public courage regarding leprosy, the contagion of which is certainly not excessively virulent. The better policy would be to aid instead of opposing the efforts of alien lepers to return home.—VICTIMS OF SANITATION: Newspaper reports attribute a high mortality among West Indian negroes in the canal zone to the sanitary regulations introduced by the Americans. Used to sleeping in close, unventilated quarters, the negroes succumb to disease when these conditions are reversed. This reasoning may not appeal to sanitarians, but does to average newspaper readers. It is not absolutely unreasonable to presume that acquired immunity to certain unsanitary conditions may exist. The apparently increasing mortality from pneumonia in this country may be due to modern conditions of living. Investigation would probably negate this suggestion but it might be of value just to secure such negation.—OVEREATING BY THE POOR: Philanthropic workers assert that a large part of the illness of poverty-stricken New Yorkers is due to overeating. There is plenty of malnutrition and some actual starvation in the slums but these are more exceptional than usually supposed. It is probable that overeating is in the form of occasional excesses more than a constant practice of gorging.

Boston Medical and Surgical Journal.—AMELIORATION OF THE CONDITION OF SCHOOL-CHILDREN: New York is instituting efforts which mean much for the welfare of her school-children. The Association for Improving the Condition of the Poor, at the request of numerous school principals, has organized a committee on the physical welfare of school-children, the object being to make a systematic examination of all defective children and afford them such relief as may be found practicable, both at home and in school. Efforts will be made to establish a system of school records that will show the child's exact condition, and also to stimulate public interest in the work. Similar efforts should be made in smaller schools as well as in the larger cities.—GROWTH OF MEDICAL LIBRARIES: Increase in the number and efficiency of medical libraries is one of the striking ways in which medicine has developed during the past 20 years. Such institutions have come to occupy a very definite place as witnessed by the fact that the Boston Public Library has during the past few years transferred many books to the medical library as being better used there than in a general library. There is no reason to doubt that the rank and file of the profession will more and more come to look upon these libraries as centers of information. They should receive the earnest support of all physicians who look upon medicine as something more than a trade.—EXPERT TESTIMONY IN CRIMINAL CASES: In view of recent developments in New York throwing discredit upon the present system of employing insanity experts, there has again arisen agitation favoring a standing commission of expert alienists. The question is perennial. So long as our jury system remains it is unlikely that the courts will assume the responsibility of appointing commissions of experts. The present system is unquestionably defective and there is little doubt that justice would be as well served and with far less loss of dignity were many disputed cases settled by a qualified commission. At present there is small evidence of amelioration but agitation and protest may ultimately lead to reform.—TO INCREASE THE EFFICIENCY OF MEDICAL TEACHING: The Harvard Medical Alumni has sent out circulars to its members asking for contributions to aid in furthering teaching in the school. Changes in medical teaching the last few years have necessitated a great increase of instructors but adequate funds for their reward have not been forthcoming. This means that enthusiasm and time of these men will be diverted into other channels when opportunity arrives. The fund asked for is to aid in paying salaries, at least at a living wage, that instructors may give their time largely to teaching. In this connection it may be said that more time in the future must be given to the education of teachers. It is to be hoped that the plans of the Harvard Alumni may work to this end as well as assist in rewarding the younger teachers.—Our Alleged Therapeutic Shortcomings: A distinguished physician is reported to have said recently that the young doctor of these days is relatively less well fitted to practise medicine than was the graduate of ten years ago, and that the average student when he begins practice knows little or nothing about compounding prescriptions. Such statements should not go unchallenged. It is a peculiarly narrow view of therapeutics which confines medical practice to the administration of drugs. The student of today gains a breadth of view in his ideas of medical practice of which the student of 30 years ago, however much he knew of prescriptions, stood in entire ignorance. Common sense is now an asset of the medical student as never before. The possibilities of medical practice were never so great as now and a higher degree of intelligence, common sense, and positive knowledge now dominates the therapeutic situation.—A Menace to the Traveling Public: A noteworthy article in the *Outlook* deals with the undue fatigue of train crews, especially of freights, under existing conditions. The writer speaks from practical experience and says that crews of these trains are often on duty for 24 to 36 hours without sleep. In one recent collision the freight crew had been on duty for 59 hours. However a railroad is equipped against accidents, the human mind is ultimately at fault and railway corporations should see that physical and mental conditions of their employes permit quick and keen action of mental processes.—The Price of Milk: The Massachusetts Association of Boards of Health has been discussing the milk problem. It is said that absolutely pure milk cannot be produced for less than 12 to 15 cents a quart. This is prohibitive to the rank and file of our population. Some means must be found to supply a perfectly satisfactory product, even though not produced under absolutely ideal conditions, at reasonable price. It will be unfortunate if the price of milk be permanently raised.

Medical Record.—Ankylostoma Infection Through the Skin: There seems to be no lack of evidence to prove that entrance through the skin is a frequent and dangerous source of ankylostoma infection. This discovery was made accidentally by Looss in 1898 and has since been confirmed by other observers, particularly in the way of clinical observations by the U. S. Commission on Anemia in Porto Rico. The thorough recognition of this fact will put prophylactic measures against the disease on a new and simple basis.—Daily Temperature Variations in Pulmonary Tuberculosis: The manifestations of daily temperature variations are greater in pulmonary tuberculosis than in any other disease. Galbraith, experimenting with monkeys to determine the effect of modifying the periods of rest and activity, produced a reversal of the normal temperature variations by making them sleep during the day and continue active during the night. One monkey was tuberculous and was found much more sensitive to changes than were the others. In the same way the effect of alimentation on the temperature was found to be much greater in the tuberculous animal. In general the experiments seem to show that gastrointestinal metabolism has a very distinct influence in sustaining a rise of temperature in tuberculosis.—An Unsatisfactory Medical Term: The word "rheumatism" is one of the unsatisfactory and indefinite terms in use by physicians. Many medical writers agree that a toxemia is the basis of disorders usually designated as rheumatic. Fairbairn regards the word "toxic" as satisfactory to both the exogenous and endogenous theories as to the origin of the toxemia as a generic term and adding the word arthritis, from the local manifestations of the affection, there results the name of "toxic arthritis" which is offered as a substitute for the present word rheumatism. This suggestion is quite logical and the term may well be adopted until more definite knowledge of the etiology furnishes a more appropriate name. — One-child Sterility: Mathews found among 1,000 gynecologic dispensary cases 82 instances of one-child sterility, pregnancy terminating within two years after marriage and no further conception taking place during the next three or more years. The cause appears to be something occurring during pregnancy or the puerperium and Mathews lays the blame in the majority of instances to gonorrhea. Even puerperal sepsis seems less likely than this to bring about sterility. The variety of sterility here discussed is deserving of closer study. Greater care should be given the pregnant woman if gonorrhea supervenes. As this affection is rarely eradicated during pregnancy the treatment should be continued for some time after.—Maternal Mortality in Tenement-house Obstetrics: The statistics furnished by Harrar from a large maternity hospital of a deathrate of 0.357 percent in over 32,000 deliveries can be regarded only with satisfaction. The most frequent causes of death were sepsis, rupture of the uterus, eclampsia and placenta prævia. Nearly one-fourth the deaths were due to sepsis, this indicating the direction in which a possible future reduction in the deathrate may be hoped for. An element of danger in this respect is the omnipresent midwife. In Europe the constant endeavor has been to elevate the standard of midwives but in this country no restriction of their activity seems to be in force.—MEDICAL EXPERT TESTIMONY: Socalled insanity experts are now being ridiculed because of a case of alleged malingering by a wife murderer in which the defense made out a case of insanity. The man was finally retried and sent to the penitentiary. The medical experts disagreed as is so often the case. However, it is not the physicians who testify but the lawyers who seek to convince juries that diagnosis is an exact science that bring ridicule upon expert testimony, though it must be confessed that some physicians foster such erroneous belief by the positiveness with which they give testimony. The paying of expert witnesses by the State would not help matters and the suggestion is based upon the assumption that all experts are dishonest. The one remedy lies in instructing the public and juries that socalled experts are practitioners of an inexact science, more experienced in their line than is the average man, but human and liable to err in observation and judgment. Hence undue weight should not be given their testimony in doubtful cases.—PERNICIOUS ADVICE FROM A CABINET OFFICER: The Secretary of the Treasury, in a recent circular to bankers, advises the issue of a larger proportion of national bank notes of low denominations and requests the banks to keep them in circulation as long as possible, not sending them in for redemption "until unfit for use." This betrays a lamentable and almost incredible ignorance of sanitary first principles. Secretary Shaw needs instruction.—EDUCATION OF THE DULLARD IN THE PUBLIC SCHOOL: It is generally said that mentally defective children should never be allowed in school, but as pointed out by Haney it would be more proper to say that they never should be allowed out of school, at least until they have been taught some measure of self-control. The education of such children cannot be undertaken in the ordinary classroom. The training must be mental, physical, and moral and must include hygienic treatment. Special teachers, well paid, should be secured for this work. It would seem that money used in this way would be well spent yet very few of our large cities have made provision for education of this kind. The State has been taught to be more solicitous regarding infectious diseases and should display an equal solicitude toward its mental weaklings.—RECIPROCITY IN MEDICAL LICENSURE: Many who have not given thought to the matter would be inclined to agree with Dr. Mayo's statements anent this subject in his presidential address. It is well that physicians cannot cross the "imaginary line" between States in the practice of his profession without transgressing the law. This is not opposition to reciprocity in medical licensure but while in favor of the fullest reciprocity compatible with the laws of the individual States, the laws of the States must be respected. Illinois has gone further than any other States to mitigate the law which might work hardship to the individual. A credit of 5 percent is allowed on the required 75 percent of successful answers, in its examination, for each 5 years the physician has been in practice. This gives the old practitioner a fair chance. If all other States followed Illinois, universal reciprocity would be as near to a realization as it ever can be, and the chimerical dream of federal licensure would be at rest.—PREMATURE ANNOUNCEMENTS OF MEDICAL DISCOVERIES: In these days the reproach that scientific medicine surrounds itself with mystery cannot be made, and great misery of disillusion follows the premature publication of untested experiments. The article by Dr. Saleeby in the August *McClure's* regarding trypsin injections in the treatment of cancer can be only detrimental to the laity. This premature announcement must be deplored.—CIGARETTE SMOKING IN GREAT BRITAIN: It is evident that a strenuous crusade against the cigarette is to be made in Great Britain, although it has been shown that their use under certain conditions is the least noxious form of tobacco indulgence.—SOURCES OF ERROR IN EXAMINATIONS OF THE STOMACH CONTENTS: A study of the literature shows that so many modifications of the formula of Ewald and Boas have been made that results from the use of test-meals are very apt to lead to false conclusions. Two sources of error are that the meal is often not given when the patient's stomach is empty and that it is not given early in the morning before breakfast.

New York Medical Journal.—THE NEW ORLEANS CAMPAIGN AGAINST YELLOW FEVER: A visiting observer, Rubert Boyce, dean of the Liverpool School of Tropical Medicine, has furnished what is probably the most graphic and appreciative account of the effective work done last year in New Orleans in overcoming the outbreak of yellow fever. He is justified in criticising the coexistence of State and national activity in conducting the campaign. Regarding the management of *Stegomyia fasciata* he states that: "Considering the comparative simplicity and inexpensiveness of the methods necessary to be employed, the only excuse for the presence of yellow fever in any district must now be attributed to indifference."—Apparent Slips in Asepsis: It is somewhat consolatory for the surgeon to reflect that not all his too frequent failures to secure asepsis are due to lack of care or to defective ligatures, sutures, or dressings. One must remember the probability that in many a necessary operative case septic germs are already present in various parts of the organism more or less distant from the operative site itself. These begin their pathogenic work whenever the natural defences are lowered either in the form of lessened local vitality or general lowering of the resistive powers of the individual. These considerations seem to warrant uncertainty in imputing postoperative sepsis to neglect or contamination of material used. However they should not be too lightly seized upon as a scapegoat and should never be an excuse for lack of attempt to locate the source of infection.—A Uniform Catheter Gauge: The American Surgical Trade Association should be commended for the action taken at its meeting in June in regard to urethral instruments. After this year all catheter bougies and sounds are to be made in conformity to the French gauge. Without discussing the merits of different gauges, the value of uniformity is apparent and the new rule will prove useful to every one concerned in the manufacture and use of such instruments.—Tuberculosis Among Married Couples: Weinberg, in collating the literature upon this subject, finds that opinions among various writers differ widely as to the proportion of tuberculous infection between husband and wife, the extremes given being 3 and 39 percent. This great difference must be attributed to the social position of the patients. In addition must be taken into account the influence of age and sex, the question of where the husband spends his working hours, and other points. If the mortality of the consorts of persons dying of tuberculosis be considered, it will be found that the proportion is double that of the general population.—Influence of Tobacco on Pregnancy and Lactation: Livon upholds the contention that women who work with tobacco are prone to abortion and that their offspring are frequently cut off in early infancy. He states that it makes the milk smell of tobacco and maintains that no woman engaged in such work should nurse her child. He admits, however, that it is possible bad hygienic conditions rather than tobacco itself give rise to the infantile mortality. The subject calls for further investigation.—Marriages Between Rich and Poor: In the United States marriages are constantly occurring between rich young men and young women earning their livelihood. In spite of the frequency, such a marriage always excites astonished comment and copious newspaper gossip. In Europe, with the supposed difference in classes, such alliances may well cause a slight shock but here astonishment is ridiculous and out of place. Few of our richest men are idle and their work differs only in magnitude from that of the poor. If a century of idleness can enervate a family, marriage into the working classes must be only beneficial. Interbreeding does not work out well in the human species. We should be disposed to applaud the good sense of any rich young American who marries a girl of poor but decent antecedents. —Painful Hyperesthesia After Typhoid Fever: Two cases of this rare complication have recently been reported by Renon and Tixier. The affection includes hyperesthesia and spontaneous pain which occupy chiefly the dorsal aspect of the toes. Both are of great severity and are little if any influenced by treatment. They are comparatively short in duration, each of the two recent cases lasting less than a fortnight.—Perils of the Aromatic Elixir: The aromatic elixir of the Pharmacopeia is probably looked upon by most physicians as an innocent vehicle with some approach to palatability. The elixir contains almost as large a percentage of alcohol as is found in brandy or whisky and a considerable amount of that substance may be prescribed, especially as it is particularly for children that the elixir is used. If employed as a vehicle for a sedative the alcohol may largely overcome the effect of the former. Another danger has recently been pointed out, in that when the elixir is used as a vehicle for the bromids combined with chloral hydrate, the dangerous chloral alcoholate may result from decomposition due to the alcohol. This floats and unless a shake label is employed the whole of the chloral may be taken in one or two doses.—The Tonsil as the Starting Point of Systemic Infection: In the light of important considerations brought forward by Dr. Jacobi, the teaching that the tonsil affords a ready entrance into the system of various infective organisms will have to be revised. Certain clinical facts which militate against the older belief are mentioned and anatomical considerations supporting the clinical observations are adduced. Injection experiments in the laboratory give rise to too ready deductions. On the whole, Dr. Jacobi seems to have adduced very good reasons for questioning the assumed readiness of the tonsils to pass infection on to the system.—Drug Habits: A recent view is that addiction to alcohol, and other drug habits, is a disease. Narcomania is more probably a symptom. Victims of congenital heart disease, gouty, tuberculous, or rheumatic dyscrasias go through life with the notion they are not quite normal until the first glass of wine or whisky dissipates the impression. The habit is then soon formed and the opium or cocain habit is easily added. The will can battle against alcohol but not against the morphin or cocain habit; the victim must be helped. Good permanent results might follow careful diagnosis of the fundamental physical condition and treatment, mainly hygienic, directed to its removal. Normal healthy people will continue to condemn unhappy narcomaniacs. Physicians should approach them in the same spirit as they do other sick people.—Municipal Ownership of Ice Plants: Ice is often as much called for as is drugs in the treatment of diseases yet under present conditions it is a luxury. It is questionable if cities should not build their own ice plants. Even the best laws cannot cope with trusts. The subject is one that should be investigated.—An Age of Temperance: With moderate drinking has come moderate eating. The modern epicure has found that the nearest approach to happiness lies in true temperance. If men in general only understood the real delights of temperance, they would be temperate out of sheer sensuality.

Surgery, Gynecology and Obstetrics.—Operation in Relation to Mental Derangement: The task of the surgeon who is to operate in a case of threatened insanity is not an enviable one but the anxiety felt is usually grounnless. In general the fact is that a useless operation may unsettle the reason; a really necessary one rarely, if ever. Many cases of insanity following operation are instances of accidental sequence but many more are the result of the unremedied diseases for which operation was undertaken. In some instances not the operation but a lack of thoroughness is the cause of the ensuing madness.

Australasian Medical Gazette.—Medical Ethics in Australia: Medical practice in Australia differs in many respects from that in England and certain practices are to be allowed which are not in strict accordance with medical ethics in Great Britain. The refusal to meet in consultation a physician who considers he is driven by circumstances to accept club practice is regarded by some as an improper attitude. Advertising to a limited extent is allowed by the New South Wales branch of the British Medical Association but this is carried by some to a point that should not be tolerated. The practice of taking secret commissions is one that would be supposed to meet with universal condemnation but it has been revealed in New South Wales. The drawing up of a code of medical ethics for physicians in Australia may well engage the attention of its medical societies at an early date.

NEWS AND NOTES.

Delaware Fights Tuberculosis.—The Delaware Anti-tuberculosis Society, which was incorporated recently, will build a sanatorium and dispensary for the tuberculous near New Castle, on a plot of ground of several acres given by a member of the Du Pont family. Patients will be cared for in tents until the buildings are completed. The establishment will be constructed along the same lines as those followed at White Haven and recommended by Dr. Lawrence F. Flick, of Philadelphia. Dr. John J. Black is at the head of the movement, in which many prominent Delawareans are interested.

A Fine Record for Rio Janeiro.—For seven weeks there has been no case nor death from yellow fever, a condition not prevailing there for many years. The city is freer from mosquitos of all varieties than it has ever been known to be. This is the midwinter season, but as the thermometer in the city never falls below 20° C. at night, there is no reason why mosquitos should be injured by the temperature. The Board of Health has done most efficient work.

Harvey Society Lectures.—The second annual course of lectures given by the Harvey Society of New York will be opened on October 20, 1906, by Prof. A. E. Wright, of London. Ten lectures are to be given during the year, the lecturers and dates being as follows: October 20, A. E. Wright; November 3, C. A. Herter; November 17, W. T. Porter; December 1, J. G. Adami; December 15, George Huntington; January 12, F. G. Benedict; January 26, E. B. Wilson; February 9, S. J. Meltzer; February 23, W. T. Councilman; March 9, Friedrich Müller. The officers of the society for the coming year are Graham Lusk, president; Simon Flexner, vice-president; F. S. Lee, treasurer; George B. Wallace, secretary, and C. A. Herter, S. J. Meltzer, and James Ewing, council.

BOOKS RECEIVED.

[Prompt acknowledgment of books received will be made in this column, and from time to time critical reviews will be made of those of interest to our readers.]

Gynecology.—The Practice of Gynecology by Eminent Authorities, edited by J. Wesley Bovee, M. D., Professor of Gynecology in George Washington University, Washington, D. C. In one very handsome octavo volume, containing 838 pages, with 382 engravings and 60 full page plates in colors and monochrome. Cloth, $6.00, net; leather, $7.00, net; half morocco, $8.00, net. Lea Brothers & Co., Philadelphia and New York, 1906.

The Eclectic Practice of Medicine.—By Rolla L. Thomas, M. D., Professor of the Principles and Practice of Medicine in the Eclectic Medical Institute, Cincinnati, O. Illustrated with 2 lithographs in colors, 6 color prints and 57 figures in black. 8 vo., 1,033 pages. Price, cloth, $6.00; sheep, $7.00. The Scudder Brothers Company, Cincinnati, Ohio.

The Autotoxicoses, Their Theory, Pathology and Treatment.—By Heinrich Stern, Ph , M., M. D., New York, Professor of Special Medical Pathology and Therapy in the College of Physicians and Surgeons, Boston. Price, $1.00, postpaid. Chicago: G. P. Engelhard & Company, 1906.

Modern Materia Medica.—The Source, Chemical and Physical Properties, Therapeutic Action, Dosage, Antidotes and Incompatibles of all Additions to the Newer Materia Medica that are likely to be called for on prescriptions. Cloth, 306 pages, $1.50. New York, The Druggists Circular.

A Treatise on Surgery.—By George R. Fowler, M. D., Examiner in Surgery, Board of Medical Examiners of the Regents of the University of the State of New York. Two imperial octavos of 725 pages each, with 888 text illustrations and 4 colored plates, all original. Philadelphia and London: W. B. Saunders Company, 1906. Per set: Cloth, $15.00 net; half morocco, $17.00 net.

The Operating-room and the Patient.—By Russell S. Fowler, M.D., Surgeon to the German Hospital, Brooklyn, N. Y. Octavo of 172 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $2.00 net.

Diseases of the Eye.—By G. E. deSchweinitz, M. D., Professor of Ophthalmology in the University of Pennsylvania. Fifth edition, revised and enlarged. Octavo of 894 pages, 313 text-cuts and 6 chromo-lithographic plates. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $5.00 net; half morocco, $6.00 net.

A Text-book of Materia Medica, Therapeutics, and Pharmacology.—By George F. Butler, Ph. G., M. D., Associate Professor of Therapeutics in the College of Physicians and Surgeons, Chicago. Fifth edition, thoroughly revised by Smith Ely Jelliffe, M. D., Ph. D., Professor of Pharmacognosy and Instructor in Materia Medica and Therapeutics in Columbia University (College of Physicians and Surgeons), New York. Octavo of 694 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $4.00 net; half morocco, $5.00 net.

Text-book on the Practice of Gynecology.—For Practitioners and Students. By W. Easterly Ashton, M. D., LL. D., Fellow of the American Gynecologic Society. Second edition, revised. Octavo of 1,079 pages, with 1,046 original line drawings. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $6.50 net; half morocco, $7.50 net.

A Reference Handbook of the Diseases of Children.—By Prof. Ferdinand Fruhwald, of Vienna. Edited, with editions, by Thompson S. Westcott, M. D., Associate Professor of Diseases of Children in the University of Pennsylvania. Octavo volume of 553 pages, with 176 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $4.50 net; half morocco, $5.50 net.

Nursing in the Acute Infectious Fevers.—By George P. Paul, M. D., Assistant Visiting Physician and Adjunct Radiographer to the Samaritan Hospital, Troy, New York. 12mo of 200 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $1.00 net.

Saunders' Question Compends: Essentials of Genito-urinary and Venereal Diseases.—By Starling S. Wilcox, M. D., Professor of Genito-urinary Diseases and Syphilology, Starling Medical College, Columbus, Ohio. 12mo of 313 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, $1.00 net.

The Examination of the Function of the Intestines by means of the Test-diet.—Medical Practice and its Diagnostic and Therapeutic Value. By Prof. Dr. Adolf Schmidt, Physician-in-chief of the City Hospital Friedrichstadt in Dresden. Authorized Translation from the latest German Edition, by Charles D. Aaron, M. D., Professor of Diseases of the Stomach and Intestines in the Detroit Post-graduate School of Medicine. Crown octavo, 91 pages, extra cloth. Price, $1.00 net. F. A. Davis Company, Philadelphia.

Practice of Pediatrics.—In original contributions by American and English authors. Edited by Walter Lester Carr, A. M., M. D., Consulting Physician to the French Hospital, New York, etc. Illustrated with 199 engravings and 32 full page plates. Lea Brothers and Co., Philadelphia and New York, 1906.

Surgical Suggestions.—Practical brevities in diagnosis and treatment. By Walter M. Brickner, M. D., Chief of Surgical Department, Mount Sinai Hospital Dispensary, etc., and Eli Moschowitz, M. D. Surgery Publishing Company, New York, 1906.

297

American Medicine

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The small college has been praised for several years by a few observant men who have noted the great disadvantages of the huge modern institutions in which a boy is submerged in the mass and no attention given to his personality. He receives little attention as to his moral side, because the home is depended upon, and in addition his personal equation is not corrected in youth—so he is warped because he follows the herd. Recently Charles Francis Adams has joined the lists and hopes to see Harvard broken up into numerous independent colleges in which each boy may receive individual study at the hands of the faculty. No two boys are alike and no two require the same management or the same curriculum indeed, though that might be considered an extreme position. Our big colleges unconsciously ape the big universities designed for college graduates who know what they want. Horse trainers have better methods than boy trainers.

The most important advantage of the small colleges has not been mentioned in the recent discussion. They are generally situated in small towns or in the country where there is a fine moral atmosphere or at least the absence of a vicious one, and the boy is not subjected to temptations at the age he is least able to resist them. In addition he is in far better hygienic surroundings, he has country air, cool, quiet nights with sound sleep, wholesome food and more inducements to indulge in proper outdoor sports. He escapes the germ-laden city dust. He grows up strong and leaves college with a healthy nervous system capable of enormous labor. No wonder the small colleges have to their credit such a large percentage of able, successful and noted men. It is a matter of health as well as better training. Get the boys into the woods and if the college is in the woods what more can we desire? Let us turn all our big colleges into universities for college graduates, and beg our multi-millionaires to endow the little country colleges whose student body must never exceed 500 or even less. They can secure just as good teachers as any big one—if they have the money.

The small medical college is also coming in for some praise on account of the greater care given to each student. So far as lectures are concerned it is immaterial whether 10 or 1,000 listen, and in the old days, when there was no other instruction, a big school was big simply because its teachers attracted big audiences. Since oratory and science have been divorced and silence characterizes medical study, students do not go where they may listen to descriptions found in any textbook, but where they may see and taste and smell and feel and hear the things themselves. They will not see and feel and hear unless they are individually taught how to do it and what to look for, so that small classes are a necessity. The big school then has no advantage over a little one as its classes are divided up anyway. If the little one has a plant and some money, it can turn out just as good men, if not better ones, than the giant pouring out its herds.

Small clinics are not to be despised. One case thoroughly studied is infinitely more instructive than a dozen rushed before a huge class and but one symptom shown in each. The big clinic is likely to spend valuable time on an extraordinary case or rare disease, which most of the students will probably never see again even if they practise 50 years. We have all reverence for the fine laboratories of the big schools, and admire their means of doing good teaching, but humbly adhere to the view that without teachers, the means of teaching are useless, and if the good teacher spreads his work over too many students each is very thinly smeared with it. The curse of the little school is the desire to increase its graduating class and ape the giants. It does not reject enough of the drones. Its pride should be the small percentage of its graduates who fail before the licensing boards. It seems then that, as in the classic colleges, a big equipment with few students is a desirable combination, if there is money to buy good teachers, too.

There should be many well endowed colleges with high requirements, rigid examinations, and student body limited to 300 or less. As a man was once proud of a diploma from a big college, he will soon be equally proud of the distinction of graduating from a high grade little one. Let the little colleges hold up their heads for they have an advantage in remaining little in student numbers, but big in results. Numbers no longer count as they once did, when there were no checks upon the results. Percentages of successes before state boards are now studied. It is disheartening to see so large a percentage of failures from the big schools and none from a little "eclectic" institution. It is not so much a question of cost, for the big schools will cost as much as the little if they have enough teachers.

An American school of tropical medicine is again shown to be urgently needed, and the American Medical Association has been asked to create a section devoted to tropical studies. At the Boston meeting, Dr. M. Herzog, of the Philippine service, moved that a committee be appointed to consider the matter of a new section, and it is probable that the desired action will soon be taken. Tropical diseases afflict quite a large section of the United States and there is considerable evidence that they are not nearly so well known as they would be, if there were schools, laboratories and workers devoted to their study. We have previously noted the desire to establish a school in New Orleans, and it should be an easy matter to get the funds. Southern business men have recently been saved from millions of losses by reason of new knowledge of yellow fever, and should now be convinced that they will be saved from other financial disasters by future discoveries. It is a common sense business proposition—an insurance—to endow the school. Unfortunately this is the only appeal preventive medicine can make. The loss of life is not felt so keenly as loss of money.

A Porto Rican school of tropical medicine has been under discussion for some time and the proposition is receiving the active aid of the Governor, the Honorable Beekman Winthrop. From his wellknown progressiveness and intelligent interest in every detail of tropical administration it is safe to predict the early establishment of the school or an institution for tropical research. It is rumored that an endowment is already a possibility if not actually promised. It is particularly fortunate that Porto Rico (our newest land) should take the lead, though it will make us somewhat ashamed of being less progressive. The island population, lay and professional, is in a friendly attitude toward all sanitary matters and welcomes scientific investigation. The land is afflicted with every tropical disease found elsewhere except the devastating epidemics and no place has those except for short periods, so that there is plenty of material for work and sad conditions which will be relieved as a result of these studies.

The Advantages of Porto Rico are Numerous.—It has a climate which permits hard mental work for most of the year and is in close touch with the numerous research institutions maintained in the West Indies by European and American universities. The authorities are keenly alive to the great good to be accomplished, for they have been duly impressed by the successful work in uncinariasis—the great sallow plague of the Island. Indeed the present "Anemia Commission" may be the nucleus about which will be grouped all future medical work, both of investigation and teaching. There is a possibility that such an institute will discover why many of the diseases of the temperate zone do not flourish in Porto Rico and thus throw some light upon prophylaxis. In every way the institute is viewed, it shows itself to be of extreme importance to medicine and it should be organized at once.

Self Scrutiny.—A brave and wise man does not shut his faults and failures out of sight, but looks at them calmly and works at their correction. He knows that however unpleasant the job it is the condition of betterment. He will not shrink to learn even from his enemies. It is so with a profession, with what we call the profession, *i. e.*, that of medicine. When organization becomes so strong that its own self-satisfaction is a guarantee of truth then it is in danger; when unanimity is so complete that criticism is ignored or silenced then is the danger serious. An illustrative example is this:—When Lazear, Carroll, and Reed had made the discovery of the method of the transmission of yellow fever, a friend of the editor of the official journal of a great and united national medical association sent the self-satisfied editor a cablegram, telling him of the discovery, and asking if an epitome of the facts should be telegraphed. No word of recognition or thanks was returned to the overzealous "exaggerator," and from that day to this no due acknowledgement of the discovery or of its importance has been made by that editor's journal, and the overzealous was not paid for his cablegram! Did the Royal College of Surgeons of Bavaria ever reconsider its vote that high fences should be placed on both sides of the railroads to prevent cerebral disease of the passengers? Did Hodge and Meigs ever acknowledge that puerperal septicemia was infectious? Did ever a hater of the eyestrain "faddist" ever acknowledge his blundering?

An amazing fact is this, little known, and less cared for:—There are in the United States several surgical specialists, each receiving for earned professional service over $100,000 a year. The profession, or many members of it, call them quacks, but they have medical college degrees; they do not charge more or as much as other surgeons for the individual operation or treatment; they are "scientific" in the sense that they have excellent laboratories, make accurate examinations, slides, analyses, etc.; draw scientific conclusions from these examinations; have good technic; have superlative skill; and above all cure their patients with extraordinary success. They are quacks in these things: Their methods of treatment are secret; they have no hospitals; they treat nobody gratis; they do not attempt treatment in hopeless cases; and they curse the "ethical" profession. They do not "advertise" more than many famous "ethicals," and not so much as some. They charge their rich patients large but not exorbitant fees; their poor and poorest, smaller and small fees; none are "bled." They cure their patients as soon as they can do so, and the testimony of many is that their success in cure is greater than that of the "ethicals" who practise this specialty. Their patients for the most part are the well-to-do, and especially the professional classes of all kinds. Their offices are crowded, engagements must be made in advance, they live "in style," they laugh at "medical ethics," charity, etc. Medicine with them is purely a business, and a highly remunerative one. "What are we going to do about it?" We would like answers to this question in our correspondence columns.

The Lane Lectures on tropical diseases delivered in San Francisco, by Sir Patrick Manson, in 1905, have appeared in book form and should be read by every physician—even by those not specially interested in tropical practice. In a pleasant popular style, the advances of the last few years have been described with just enough detail to avoid fatigue and just enough to add great scientific value. The book suggests the thought that there is great need of this kind of literature—written by specialists for the general practitioner—not to enable them to practise this specialty but to be generally well informed. The technicalities of special literature, though time-saving to the informed, practically prohibit reading by men busy in other lines.

We need a literary clearing-house, where we can all go for information. Perhaps many of us will discover that our particular line is closely connected with some other which we thought was wholly independent. The great complaint against specialists—and that includes every physician, of course—has always been their self-centered activity and inability to see the bearing of other diseases. To avoid this, there is a widespread opinion that the young man should not switch off into a specialty until he has been in practice at least ten years or more. This takes him beyond the age at which he learns best, so that he is less skilful but broader. Perhaps with more simple literature, condensed and in pleasant vein, the breadth of learning may be attained while switching off earlier, and it would later enable one to keep abreast of the general advance in all lines while pegging away faithfully in his own workshop.

Medical reviews are also needed, and the need has long been known, but unfortunately the work is usually done with scissors instead of brains. Several lay journals have hit upon the proper plan of telling what is going on, and doing it in a pleasant readable way. They have been instantaneously and remarkably successful for they filled a need and busy men now depend upon them to keep informed of progress. Let other specialists occasionally kick over their ethical traces and tell the rest of the profession what they are doing—omitting all seven-syllabled words—now that Sir

Patrick Manson has set the pace. Mental dyspepsia invariably followed the old attempts to keep up—there was no appetite for the food. Staple articles in small amounts and not too fantastically cooked are the natural diet.

Unprogressive physicians have received a severe rebuke at the hands of a newspaper man. "I believe many of the laity are less prejudiced than some of the older medical men. They are medicine men strictly. I was absolutely amazed at the ignorance of a leading practitioner in a university town in this State. He read no medical journals —too, busy he said—and Lord knows how he holds his practice. Even I—abused layman—knew in a very slight way of some of the advances and discoveries of which he knew nothing—and he was as dogmatic and intolerant as he was ignorant." How many are like this one? Not many we hope, for there is no excuse. Poverty does not excuse one, when a dollar a year will keep him informed of progress; modern medical journalism also is trying to reach the busy man, who can devote but a short time each day to short articles, short extracts, and short comments on the progress of medical events.

Eugenics has again caused a flutter of popular interest. This time the idea has been advanced that we can breed up a race of superior men in the same way that Luther Burbank is creating such wonderful plants. Of course we can. He simply raises a hundred thousand plants, finds among them one or two with the proper variations, saves these two and destroys all the rest. We can do the same. Let us examine all the children in each congressional district—about 100,000 more or less —select the two we consider the best, and hang all the rest. It is simplicity itself, but there is one slight difficulty. Burbank's plants have no voice in the matter, but every human father has a vote on this proposition, and will decide that his type is the best and the other children should be—so the system itself will be hung up. All this nonsense about eugenics will cease when the silly season is over.

Stirpiculture is a most accurate and scientific process as applied to domestic animals and the more it is investigated the better. Yet, here, too, there is not the slightest chance of applying it to man. The stock breeder selects for his purpose only a few of the thousands born, and sterilizes the others, or keeps them from breeding, or kills them. As we have before explained, he usually emphasizes one trait, like speed in the horse or wool in the sheep, at the expense of all other characters. If we could try the same methods we would only succeed in breeding types of men, noted for one character—say muscularity without sense, or brains without physique. We do not know what types could survive in the future environment civilization is building up, and the types we produced might not be suitable at all. Future man will be as different from us as we differ from the cave-man, and nature will attend to the matter without any suggestions from us. She will simply destroy the unsuitable.

A commission to study heredity has been formed by the American Breeders' Association under the initiative of its secretary, the Hon. W. M. Hays, assistant secretary of agriculture. As it is a vital matter to the human race also, their investigations should be given the widest publicity. They are evidently not impressed with the ill-considered suggestions about eugenics, because they are well aware that young folks will continue to select their own life partners in obedience to an instinct which we do not pretend to understand. The only thing we do know is the fact that human animals, like lower animals, tend to select partners somewhat different from themselves, probably because of an inherited tendency to keep the species nearer the average. Aberrent types perish, so that the desire to magnify traits, as the stock breeders do, is distinctly unnatural.

The cause of variations will naturally be the main point to investigate, for if stock breeders can tell what causes desirable traits to appear, they have the situation in their grasp. They can leave to the biologists to discover why the offspring do as the parents did in like environments—indeed that seems to be a necessary result of the fact that the offspring is merely a budded-off piece of the parent. What physicians want to know is why children differ from parents and why certain defects and diseases appear. The trend—perhaps too much the trend—of modern thought is in the direction of searching for the causes in an unwholesome environment. Every bad result must have a cause, which might be removed to prevent future cases.

Bad offspring usually die off, if not early, at least in a generation or two. Consequently the present criminal class will not leave many descendants. More than half of them are children of respectable parents. The criminals of the year 1925 or 1930 are now being born in respectable households, It is our duty to find out why they will not grow into good citizens and why we cannot compel normal development. That is the only practical eugenics, and it will surely become a possibility in the future, so that one generation will not suffer for the ignorant sins of the previous one. Every study in heredity and its perversions is a step in cleaning the human race. To only that extent can we uplift the race. People will marry whom they select and not whom society selects, so let us accept the inevitable and teach them how to raise good offspring, from which nature can select the proper types. If part of the money now spent on children's hospitals could be devoted to finding out the causes of their illnesses and deformities, perhaps we might so far prevent them that we would not need so many hospitals for them. Every encouragement, therefore, should be given to this new commission on heredity, for every discovery it makes takes us a step nearer to the prevention of human diseases and deformities.

The death of a boyish athlete in Westfield, Mass., at the end of a quarter mile sprint, again calls attention to the dreadful danger of excessive exertion in immaturity. It is pitiful enough to see one cut off at this early age, but it is doubly horrible that it could be prevented if the medical profession would only teach laymen of these dangers. The human frame is not built for heavy strains even in adult age, for arteriosclerosis and dilated hearts are the common results, but in the case of mere boys, the modern "sports" are so unnatural as to be distinctly pernicious. Sudden deaths by acute dilation or heart failure from overwork, though very rare, show that a nervous boy can put an enormous strain on his circulation. The actual damage, as a rule, does not show itself until some time later. The green stick bends and is warped but does not break.

The pedestrian Weston has reached an advanced age and yet was recently able to walk from Philadelphia to New York in phenomenally short time. He is a living example of the results of sports which never put a very great strain on the arteries. Walking is normal but is too tame for the modern boy who wants to sprint a short race—and do a short labor which requires an enormously powerful hypertrophied heart. Walking may be carried to the point of extreme exhaustion, but it does not raise the blood-pressure or require the big heart of the sprinter. It seems as if we are somewhat negligent as a profession, for failing to harp upon this matter, to rectify the dangers creeping into the overdone athletics for half-grown boys who ought to be out fishing instead of "training." The after-history of noted college athletes should be published to show the large number who are wrecked by tuberculosis, nervous exhaustion, arteriosclerosis and heart disease.

Longevity in sedentary employments is a notorious fact, providing the men are not exposed to harmful conditions such as dust, dirt, and dulness. Clergymen lead the list, so it is said. It has often been remarked as a reversal of natural law, but it is the most natural thing in the world. Our modern athletics is the unnatural thing. Men like Lord Balfour and Joseph Chamberlain have boasted of their disinclination to active sports, though they have unconsciously taken enough exercise in golf and like games. Gladstone would chop trees but would not run a mile. They never strained their arteries, nor enlarged their hearts, nor wasted their nerve force, nor became so "run down" as to be easy victims of bacterial invaders. It is time to get back to nature where excessive labor is the rare exception—all wild animals do their work easily. Savage man takes life easily in more senses than one. His normal is what we call laziness. Normal sports for boys should likewise be easy and never require a heart strain.

The Prophylactic Value of Antitetanic Serum.—The brief but instructive paper published by Dr. H. J. Scherck,[1] chief dispensary physician of the City Health Department of St. Louis, is worthy of more than passing notice. It records 291 cases of injuries caused by toy pistols and other Independence Day vulnerators, in which, in addition to laying open the wounds, with thorough cleansing and cauterization by means of 25 percent phenol solution and the use of loose wet dressings of 2½ percent phenol solution, an immunizing dose of 10 cc. of antitetanic serum was in each instance injected into the abdominal wall, after thorough cleansing of the site of the injection, which was afterward closed by collodion gauze. These cases, in not one of which did tetanus develop, extend over three years, 1904 to 1906. In 1903, 56 cases were treated with the same local measures, but without the immunizing serum, and in 17 of these tetanus occurred. The comparison speaks for itself; and it would seem incumbent upon every physician who has to deal with injuries of this kind to use this efficient prophylactic measure. In about two-thirds of the cases it will probably be a superfluous precaution. In the other one-third it will prevent serious disease and probably death. But as no one can determine beforehand which two out of every three cases will escape tetanus in the absence of immunization, it is, we repeat, the surgeon's duty to immunize all three. It is a well-established fact that antitetanic serum is of little efficacy if its use is deferred until after infection of the central nervous system; but it is of highest usefulness as a preventive of such infection. The powdered serum dusted over the wound, seems to be equally efficacious as an immunizing agent with the liquid serum injected subcutaneously. The powder, moreover, is easier to preserve and more readily handled; its use should therefore be recommended. But whichever method be chosen, whether subcutaneous injection of liquid serum or local application of the desiccated and powdered serum, it is certainly incumbent upon physicians and surgeons who have to deal with suspicious wounds, however and whenever inflicted, to take this simple and efficacious precaution against a most distressing and dangerous infection.

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[1] Journal of the American Medical Association, August 18, 1906, page 500.

The Jungle is the title of a remarkable novel which is deservedly attracting much attention as it deals with the unspeakable struggle for existence of the workers of the Chicago stock yards. Incidently it mentions the criminal practice of using diseased and decayed meat for the manufacture of sausages and other products in which the unwholesomeness of the foods can be concealed by chemical treatment. The book is painfully fascinating as a work of art and it is most timely as it adds to the increasing volume of evidence that the submerged tenth of our people are in as degraded conditions now as they always have been. America is like every ancient civilization in which there were fabulous riches of a few and abject poverty of the many.

The medical profession is vitally interested in this whole matter, not only from the sanitary defects which explain so many cases of acute indigestion which are really ptomain poisoning, but also from the larger sociologic view. Huge numbers of our immigrants are shown to be of such inferior intelligence that they are unable to do any work except the most primitive, and of course their remuneration is very little. No modern industry can be carried on without a minute division of labor, consequently there is a demand for men and women who are unable to do much more than paint tin cans or paste on labels, or to fetch and carry for some one else.

Perhaps We Induce Immigration under False Pretences.—The poor peasant is attracted by accounts of wages which appear to be fabulously great so that a stream of these poor deluded folks pours into this country only to find too late that living expenses are so high that they cannot live as well as they did at home. There is a consequent overcrowding of houses with unsanitary conditions which almost defy belief. The children raised under such conditions will surely be the burdens of future society. There is a hopeless tone to all the discussions of the evil for everyone seems to be overwhelmed by the thought that modern industries demand these conditions. Factories will fail unless there is a large unemployed class from whom to select cheap laborers at a moment's notice, and unless pinched for necessaries these men will not work. National prosperity makes a demand for more low grade workers and they flock here to fill the want. The general trend of thought is in the socialistic direction of State intervention to enforce a decent respect for sanitation, to the end of diminishing the atrocious loss of health and life now inevitable. It is a work calling for expert knowledge and the physicians of the country can do their share.

Mississippi Applicants for License.—In the list of 231 applicants for license to practice medicine in Mississippi, twenty-one are negroes, and one is a white woman. The only female applicant is a woman of, perhaps fifty years, who comes from Michigan.

BOOK REVIEWS.

Progressive Medicine.—Edited by H. A. Hare and H. R. M. Landis. Vol. VIII., No. 1, March 1, 1906. Philadelphia and New York: Lea Brothers & Co.

This number reviews the Surgery of the Head, Neck and Thorax, by C. H. Frazier; Infectious Diseases, by R. B. Preble; Diseases of Children, by F. M. Crandall; Rhinology and Laryngology, by D. B. Kyle; and Otology, by B. Alexander Randall. As usual the first two occupy the major part of the book. Each is a valuable epitome of medical progress.

Personal Hygiene.—By Alfred A. Woodhull, A.M., M. D., Brigadier General, U. S. Army, retired. New York: John Wiley & Sons, 1906.

This little book of 221 pages contains the substance of lectures delivered during recent years to Princeton students. It is very well written and the subject is handled in a judicial manner that is so often lacking in books of this character. The difficult topics of tobacco and alcohol are discussed in a most satisfactory way. The book is a thoroughly reliable one to be placed in the hands of students.

The World's Anatomists.—By G. W. H. Kemper, M. D. Revised and enlarged from the original publication in the Medical Book News. Philadelphia: P. Blakiston's Son and Co., 1905.

Brief biographies of 229 of the world's anatomists, with 11 illustrations, are now presented in a neat little paper covered book. It will prove valuable as a reference and will stimulate study of the history of medicine, a subject now universally neglected.

International Clinics.—Edited by A. O. J. Kelly, A. M., M. D. Vol. IV. Fifteenth Series, and Vol. I, Sixteenth Series, 1906. Philadelphia and London: J. B. Lippincott Company.

These volumes contain the usual number of well-written and well illustrated papers. Among those in the first are the Treatment of Psoriasis, by W. S. Gottheil; The Thyroid Gland, by T. R. Brown; Thrombosis and Embolism Following Abdominal Operations, by W. A. Edwards; and studies on Ectopic Pregnancy, by T. A. Ashby and by F. S. Newell The feature of the volume is a report by A. S. Warthin on the effects of röntgen rays upon the blood-forming organs with reference to the treatment of leukemia. He combines an experimental and autopsy study with a careful review of the literature. A contribution to the study of eosinophilia by C. E. Simon runs through both numbers. In the second volume are papers by Tyson, Fussell, Senn, Battle, Faure, Cumston, and others. J. B. DeLee discusses methods of rapidly delivering the fetus in cases of eclampsia. E. Barie contributes a paper on the dechloridation treatment in diseases of the heart. A review of the progress in Treatment, Medicine, and Surgery, during 1905, by Drs. Stevens, Edsall and Bloodgood, occupies 100 pages of the book. Both volumes are a credit to the editor and contributors.

Uric Acid.—By Francis H. McCrudden. Boston: The Fort Hill Press.

In this book of over 300 pages, McCrudden considers the chemistry, physiology and pathology of uric acid and the physiologically important purin bodies and furnishes a discussion of the metabolism in gout. The work is a most exhaustive study of the literature of this perplexing subject, hundreds of references being given. The compiler draws no set conclusions, preferring that the reader should gather the present status of the subject from the material supplied. The review of literature was undertaken as a part of original work in chronic bone diseases, as rheumatoid arthritis, etc., and in the introduction McCrudden states that it has led to the general conclusion that rheumatic diseases and uric-acid metabolism do not at present seem to be closely related. The book represents an enormous amount of labor and will serve as a vademecum for those who wish to investigate the subject.

Skiascopy—Its Practical Application to the Study of Refraction.—By Edward Jackson, A. M., M. D. Fourth edition. Herrick Book and Stationery Company, Denver, Col., 1905.

This valuable monograph, which has done much to popularize skiascopy as a routine test in refraction work, has been completely revised and considerably enlarged. The higher possibilities of skiascopy are enthusiastically set forth, and the minutest details of refinements in the test are discussed. An exceedingly practical chapter on "Exact Skiascopy" has been added, and to render the treatise more complete, a chapter on Auto skiascopy has been introduced. Dr. Jackson deserves warm commendation for the lucid and interesting manner in which he has treated such a technical subject.

New Medical Series: The Medical Diseases of Infancy and Childhood.—By Alfred Cleveland Cotton, A. M., M. D., of Chicago. J. B. Lippincott Company, Philadelphia and London, 1906.

The first part of this book is given over to a consideration of the anatomy, physiology and hygiene of infancy and childhood. This section comprises over 150 pages, and is one of the most valuable features of Dr. Cotton's book, as it gives a more detailed exposition of these important subjects, than is usually found in works on pediatrics. The second part of the volume, on the medical diseases of children, is rather broader in its range than indicated by the title. Diseases of bones and joints, other surgical conditions, diseases of the skin and of the special sense organs, are all considered briefly. The medical diseases, properly speaking, receive a more extended consideration; although the difficulty of condensing so much matter into a limited space, has produced a brevity in some subjects, which we would like to have seen treated at greater length, the book can be strongly recommended as a work of reference and as a text book.

CORRESPONDENCE.

THE VIENNA CLINICS.[1]

BY

MYRON METZENBAUM, B. S., M. D.,

of Cleveland, O.

To the Editor of American Medicine:—For the past hundred years Vienna has been the medical center of the world. From her school of medicine have come many of the most noted men in physical diagnosis, internal medicine, surgery, pathology, dermatology, clinical instruction and scientific medical observation.

No other single city can mention the same number of men whose names stand out as brilliantly in the fields of medicine and surgery, nor can any other city boast of the same vast number of foreign students seeking instruction. Vienna has been the Mecca to the students of medicine and today is attracting men from all parts of the civilized world. But, however glorious the position of Vienna of the past and present may be, during the last decade other medical centers have become equally, if not in some instances, even more important.

Vienna has flourished so gloriously because it is one of the oldest cities in Europe and because the nobility have always been patrons of art and learning and so have attracted students in all branches of learning from the various parts of the world.

The famous Allgemeine Krankenhause or General Hospital with its 2,000 beds, was erected by Emperor Joseph I, over 125 years ago. Not only does the hospital attract patients from all parts of the civilized world but a very large portion of its material comes from many of the lesser advanced countries of the Balkan Sea, as Roumania, Bulgaria, Servia, Montenegro, Slavonia, Cretonia and parts of Gallicia, Poland, Russia, Hungary and Bohemia. This latter class of patients seldom apply for treatment until their diseases are far advanced, and so furnish many rarities of neglected and unattended diseases.

In all Austria there are but four medical centers, the first at Vienna, the second at Prague, the capital of Bohemia, the third at Innsbruch, the capital of Tyrol, and the fourth at Gratz, the capital of Styria. In Germany nearly every city of importance has a medical university.

The hospital of Vienna is but a single building with many wings. This single building practically comprises the entire clinical department. In most other cities, the new Charité in Berlin being an exception, each department of medicine or surgery may be in a separate building or hospital, and these are often great distances apart. Vienna is the birthplace of specialism and for this reason the hospital has always been divided into many departments and in each department there are usually three clinics, as for example, there are the first, second, and third clinics in medicine, obstetrics, surgery, skin, etc. Each clinic in turn receives the patient applying for admission for a period of twenty-four hours. The professors in each department have special interest along certain lines and thus, so far as is practical, they select those applying for admission who have diseases of special interest to them, referring others to the next clinic. In this way the work seen in each clinic is always to a large degree special, as for example, a large number of patients in a ward may be suffering from nephritis, or heart lesion, or from one of two diseases common to Vienna, namely exophthalmic goiter or tetany.

Patients entering the hospital practically give up all their personal rights. They may be examined, reexamined, lectured upon at the clinics, or demonstrated to private classes of students a number of times a day.

Native Students.—The medical course in Vienna is of five years' duration, two years of laboratory work and lectures, and three years of clinical instruction in the hospital. The examinations are oral, the first held at the end of two years, and the last at the end of five years. Any graduate is eligible to a hospital appointment. First he serves a year as an aspirant or interne in the various departments, then he may be appointed as an assistant to a clinic where he will serve one year each as fourth, third, second and finally as first assistant to a clinic. After this he may be made a private docent and thus enjoy the privilege of working and teaching in the clinic, finally he may become extraordinary professor and after many years, usually not before he has reached 40, he may be ordained professor.

There are two methods of instruction. First the university lectures given in the amphitheaters by the professors to which all students, as well as foreigners, may attend.

Second, private courses given by the assistants. There are two kinds of private courses, those given to the native students, and those given to the foreign students only.

Foreign Students.—By foreign students is meant all those not regularly attending the university. They are chiefly Americans, English, Hollanders, some Germans, Russians, Poles, and a few others.

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[1] Read before the Alumni Association of Resident Physicians of St. Alexis Hospital, January, 1906.

The foreign students usually club together in groups of ten, and selecting one of their number as fuhrer or leader, they apply sometimes to a professor, or private docent or to the first assistant to give them a private course. To illustrate what this private course is like let us take as an example a course in medicine.

A clinical department in medicine has about 75 beds. All the patients are examined by the interne or assistants, their histories taken, their various excreta examined, blood examined, ophthalmoscopic examinations made, and anything that can be learned about the patient is noted, and kept on file. Any one in the private class is allowed to visit the ward and examine the patients during a set time of from one to two hours daily. The lecturer assigns to the leader of the class a certain number of patients, and he in turn designates at least one patient to each member of the class for daily examination. Each case comes to you in rotation, and so far as possible every case for demonstration has been examined by each member of the class. In turn each man demonstrates a case before the class, showing his methods of examination, giving his findings and stating his diagnosis. Then the lecturer either confirms all, or if only in part, shows wherein the errors have been made, or how the method of examination can be improved and may demonstrate new signs of physical diagnosis, show the laboratory tests and the methods of making the same, and finally, when possible, may show one or several similar cases. Such a course lasts from one hour to one hour and a half.

Should any patient demonstrated upon, be transferred to any other department, the progress of the case is mentioned from time to time. If the patient is sent to the surgical department then the class as a whole is usually present to witness the operation.

Since all patients do not recover and it is usually the seriously sick, who have many complications which may not be easy of diagnosis, it is in these cases in which the positive diagnosis is not clear, that the students differ from the assistants and both in turn may hold different opinions than the professor. In these cases in which such diverse opinions are held it seems plain that the assistants anxiously await the demise of the patient so that proper diagnosis may be established. Every morning at the Pathologic Institute there are assembled groups of students and assistants and often the professors watching the autopsies.

Pathologic Institute.—It is this department more than any other, that has helped to give the Vienna clinic its high standard, for an autopsy may be performed after any death which has occurred in the hospital. The natural course of the dead, before burial, is to the Pathologic Institute. Here the work commences at 9 a. m. Every cadaver is dissected by removing every organ, including the tongue, larynx, all the thoracic, abdominal and pelvic organs, and cranial contents. They not only seek the immediate causes of death, but look for every evidence of past disease. All the findings are recorded, and the organs placed on trays. And now for the value of this all. Every evening a private class, nearly all Americans or foreigners, collect around a large stone table, here the first assistant gives a short history of the case, shows all the organs, points out the pathologic changes, shows the nonpathologic, demonstrated evidence of former diseases, as apical tuberculosis, pleuritic effusions, unresolved pneumonic areas, old infarcts of the lungs, or kidneys, evidence of lues, scars from traumatism, healed echinococcus cysts, changes in the circulatory apparatus, results of strictures, or scars from operations. Nothing seems to escape the eyes of these long-trained observers, for they dissect all the organs, always seeking something. If there is any doubt as to the nature of any tumor or tissue, the frozen section is made and the microscope is brought to aid. All tissues of interest are worked up and sections may be obtained from the same. The number of autopsies being large, they often keep certain series for a few days, and each evening the demonstrations may tend along certain lines. For example, there may be from five to ten cases of malignant growths. The same for heart lesion, brain lesion, and so on.

All the material from the surgical departments is also sent to the Pathologic Institute for examination, demonstration, and microscopic study. It is here that a man's reputation as a diagnostician is established, for this is the judgment hall, wherein a man's diagnostic ability is proved or disproved.

Histologic Department.—Here one may pursue a course much after his own wishes. You may study the already mounted slides of the normal histology or along general or special pathologic lines. If you wish you may take up malignant growths or changes of the nervous system, or you may study changes of bones, glands or circulatory apparatus, or you may receive material from the autopsies, or from the surgical, gynecologic or obstetric departments.

Special Value of Foreign Clinics.—This lies chiefly in the fact that you may first see a patient in the dispensary, then in the medical ward, then if he is transferred, in the surgical ward, and if he dies you witness the autopsy, examine and obtain microscopic sections of the various diseased organs. It is this opportunity to follow every case step by step, note the progress of the disease in its minutest detail, that gives the clinics of Europe and originally that of Vienna their special value.

Surgical Clinics.—These are university courses and are given to all the students in the amphitheaters. The professors demonstrate, lecture, and operate. The operators as a rule do not possess the superior technic nor the speed of the American surgeons but they are masterful in the field of surgical diagnosis, and very scientific in the investigations of all surgical problems. The minutest details of every case are investigated and the patient's condition is noted for several years after leaving the hospital.

Surgical Diagnostic Courses.—These are private courses attended almost entirely by Americans. During the hour you examine and hear the lecturer demonstrate from five to eight cases, and on the day following you may see these patients operated upon. From the lecture point and as far as possible from the clinical side the course is quite systematic, taking up in their order tumors, diseases of the bones, the glands, circulatory system, fractures, regional surgery, etc.

Operative Surgery.—This course upon the cadaver is usually given during the evening hours from about 7.00 p. m. to 9.30 p. m. Here under the guidance of the first surgical assistant you perform almost every typical operation, from a simple amputation of the finger to a gastroenterostomy. This course is limited to three or four men.

Orthopedic Clinic.—This is probably better known than any other similar clinic. The very great amount of tubercuoslis of the bone, and rickets, which exist in and about Vienna, together with the great number of patients who come from almost all parts of the world seeking aid from its famous professor, supply this department with almost unlimited material.

Nose and Throat Dispensary.—In this department there are from 100 to 150 patients a day. During the two-hour daily course there is a short talk, then a demonstration of a few cases on a special subject, after this for an hour and a half you examine, diagnose, treat, and perform some of the lesser operations.

The courses on the ear, those on the eye and the special courses with the ophthalmoscope are among the very best to be had anywhere.

The university lectures on diseases of the nervous system have always been very well known and it is often impossible to secure a place in the private courses for a whole year.

Genitourinary Clinics.—These have an unlimited number of patients, and no matter how large the staff of assistants it is practically impossible to give thorough attention to the great numbers applying for treatment. In these departments one is afforded an endless opportunity for practice. There are several private courses with the endoscope and cystoscope.

Dermatology.—The science of dermatology, if such it may be rightly called, was born in Vienna. In the three clinics there is seen a never ending series of patients. There are also at least three private courses which are attended solely by Americans.

Gynecologic Courses.—These are not at all satisfactory inasmuch as they are only diagnostic and one is seldom permitted to perform any operative work, although you may see the patients you have examined operated upon.

Obstetrics.—There are three clinics for obstetrics, one for midwives only, and two are university courses. In these two clinics the first assistants give a two-hour daily private course to classes of six, usually Americans. During these two hours by palpation and digital examination you may examine eight to twelve patients, who are in the beginning stages of labor, or you may witness and aid in from two to four births or perform some surgical delivery. There seems to be no day in which there is not either a version, forceps delivery, repair of perineum, retained placenta, miscarriage, and frequently a craniotomy, placenta prævia, ectopic gestation or cesarean section.

In these three clinics there are from 11,500 to 12,000 births a year.

There is a unique feature in one of these courses, namely, through the abdomen of a female cadaver a dead fetus is inserted in the various malpositions. First you diagnose the position, determine upon the necessary method for procedure and perform the various extractions, as well as the various destructive operations for its removal. This really gives the student a very definite idea of the real situation.

Pediatrics.—The department of children known as the St. Anna's Kinderspital, or Children's Hospital, is located about three blocks away from the krankenhouse. Here there is an excellent opportunity to see hordes of children, especially those afflicted with tuberculosis and rickets.

Polyclinic.—This institution with its 200 beds is situated just one block from the krankenhouse. The courses given here are quite similar to those of the polyclinic in New York. The daily dyspensaries are very large and its close proximity to the general hospital gives one the opportunity of pursuing many excellent courses without losing time.

Beside this there are at least three other large hospitals somewhat distant, where excellent work can be had and where the clinics are not overcrowded with students. These are the beautiful new Elizabeth or Woman's Hospital occupying two entire squares, the Rudolph Hospital, and the Franz-Joseph Hospital.

The old krankenhouse is being rebuilt on a square just opposite where, until, recently the insane asylum with its 700 beds stood. This has been torn down and rebuilt on the outskirts of the city. The new hospital will have 2,500 beds and is to cost 40,000,000 kronen or $8,000,000. It is being built on the pavilion style and when completed it will be very spacious and equipped with the latest scientific apparatus. This new hospital will afford the long-desired opportunity for better scientific work, and will give a new impetus to the Vienna clinics.

There is really no line of work one cannot pursue in Vienna for you may engage instructors to give a class, lectures in almost any field one may desire.

Cost of Instruction.—The university or professor lectures are delivered in the amphitheater and are open to all students. They practically cost nothing, although one is supposed to register at the university and to pay about $20 a year and obtain a card of admission to these lectures. Since only a few of the professors demand cards of admission naturally very few foreigners purchase them.

The private courses generally cost ten florins (a florin is forty cents) or $4.00, for a class of ten, as a maximum number. This brings it to about forty or fifty cents per student for the hour or hour and a half of work. The obstetric and gynecologic courses are limited to six in number and cost $1.00 per student each day for the two-hour course.

The operative surgical course is limited to three or four, and costs one dollar per student for the evening.

In some few courses the number of students may be as high as 20 or the lecture last only a half hour; in such a case the cost will be half a florin or a kronen, which is 20 cents per lesson.

The Americans are always abroad for work, and so in addition to attending two or possibly three university lectures every one takes three or possibly four private courses. This brings the minimum cost per day to about a dollar, or it may even reach as high as three dollars.

There is very little opportunity for the American student to work his way through as in this country. Most Americans desire to study several branches at the same time, however, if one specializes and devotes most of his time to one department he may receive an appointment as a (voluntair) or lesser assistant in this clinic and then he can do almost unlimited work without any cost.

Regarding the cost of living in Vienna, rooms are quite reasonable. But the cost of meals is quite as expensive as in any large city, even New York. If one desires to eat wholesome food and keep well nourished, so as to be able to do good steady work, the cost of room and board will be at the minimum $7.00 per week, while the same kind of living throughout Germany would probably not exceed $5.00.

Other Universities.—In Prague, the capital of Bohemia, there are two distinct universities, one German and one Bohemian. To those familiar with the language, the Bohemian clinics offer unusual opportunities for pursuing work at a very nominal expense. The German clinics at Prague likewise offer excellent courses, especially in obstetrics and gynecology.

In Buda Pest, the capital of Hungary, there is one hospital with 1,700 beds, and a very large new pavilion hospital; beside there are two distinct new hospitals for gynecology and obstetrics and a large polyclinic. To this can be added several very large denominational hospitals. Unfortunately the German language is not tolerated in Buda Pest. It is for this reason that these large clinics are not well known.

However, in each hospital there are always several men who speak English. The Americans are especially welcome in Buda Pest, and there are many unusual opportunities for doing work in the clinics and hospitals.

No matter how much we may wish to glorify the past history of Vienna and uphold its present high standard, yet since the founding of the new German Empire, the eyes of the scientific world have been turned toward her almost perfect laboratories and vast clinics affording unusual opportunities.

Almost every city of importance throughout the entire German Empire has a complete medical university. The old hospitals have been rebuilt and in their place magnificent new and commodious structures have been erected. These are equipped with complete laboratories and filled with enthusiastic men engaged in research work. All the German atmosphere is permeated with the spirit for scientific research in its many branches. While Berlin stands out as the most prominent of the German cities in the field of medicine, there are many other cities of almost equal importance, possessing large medical universities and well-equipped hospitals, as Leipsic, Halle, Dresden, Breslau, Heidelberg, Wurtzburg, Münich, Frieburg, Gottingen, Erlangen, Kiel, Marburg, Giessen, Bostock, Tübingen, Strasburg and Jenna.

Only a few years ago it seemed necessary for the American physician to spend some time in Paris, but during recent years only few Americans study at the French clinics. While the clinics are overcrowded with patients, and the professors as renowned as ever, yet the learning of the French language is a very great drawback.

For the American student and especially those who are not familiar with the German language and do not care to learn it London and Edinburgh offer very fine opportunities. In these places, Americans are quite welcome and everything seems more familiar than in Germany, Austria, or France. The clinics are always crowded with patients and students and there are abundant opportunities for doing special work. In London, however, the various hospitals are scattered, so that much time is lost in going from one place to another.

Omitting the general education which comes from traveling abroad, if one is seeking only good practical, medical, and surgical work he can find large and well-equipped clinics with able instructors in New York, Philadelphia, Baltimore, Boston, and Chicago. These clinics can supply any man's postgraduate needs and before another ten years has passed the American clinics will not only take care of a large percentage of their own students but will attract, especially in the field of surgery, students from the other shores.

Tuberculosis and Fog.—Nothwithstanding its fogs, London has a lower mortality from tuberculosis than other European capitals. In 1904 it was only 166 per 100,000 inhabitants, as against 257.5 in Berlin, 254 in Milan, 256 in Madrid, 314 in Vienna, 383 in Paris, 387 in Moscow.

A CASE OF RATTLESNAKE-BITE TREATED WITH ANTIRATTLESNAKE SERUM AND WITH SERUM ANTIVENEMEUX (CALMETTE).[1]

BY

W. F. ARNOLD, M.D.,

Surgeon United States Navy, Retired.

To the Editor of American Medicine:—I did not see this patient; in fact, I had no other connection with the case than that of purveyor of the remedies used. They were applied by my sister, Mrs. E. A. Ireland, at Jensen, Florida and the notes of the case are collected and slightly rearranged from her letters to me, but they are unchanged in all essential particulars.

I think it best to explain at the outset that I do not wish to claim that the man would surely have died but for the treatment that he received; too many persons in this country survive rattlesnake bites without treatment, or even in spite of treatment—by tobacco and by whiskey *ad libitum*, for example—to justify any such a claim. Further, nothing definite of this kind could be predicated, unless it were known what quantity of venom was injected in this case, which cannot be ascertained.

It should be borne in mind, however, so it seems to me, that the snake in this case was an average specimen, as to size, of the most deadly viper that the United States affords; that both fangs penetrated at least into the derma; and that, in spite of the apparent absence of fright from the patient, there was sufficient absorption to afford severe precordial pain at about the end of the first hour. But I take the most important lessons of this case to be, first, the absence of ecchymosis and of edema in the bitten part, and, second, the comparatively rapid subsidence of what inflammation resulted, which I think may fairly be ascribed to the action of the antirattlesnake serum.

I regret that I cannot describe this serum more accurately. It was prepared by Dr. Joseph McFarland when he was director of Mulford's vaccine and sera laboratories at Glenolden, Pennsylvania. Dr. J. J. Kinyoun, his successor there, preserved it; and he sent it to my sister at my request. I have kept her supplied with Calmette's antivenomous serum ever since I saw it for the first time, which was at Saigon in 1896. I think that my sister must have used Calmette's serum upon this case partly because McFarland's serum was not as plentifully at hand as it was, and partly for the reason that the local reaction was less pronounced than were the general nervous symptoms.

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[1] Reported at the Nashville Academy of Medicine, July 24, 1906.

Haaman Adley, colored, native of the Bahama Islands, aged 25, weighing 135 lbs., unmarried, of very temperate habits (smoking but a very little), and considered to be in perfect health, was bitten at about 1 o'clock in the afternoon of July 15, 1906, by a rattlesnake, on the outer side of his right ankle. He was sent hurriedly to Mrs. Ireland's residence on horseback, and the treatment began within 15 minutes after he had been bitten. No ligature was applied (he had even loosened his "Boston" garter); and he had been instructed by means of the telephone not to partake of whiskey, following Calmette's directions for such cases. He did not appear to be frightened.

A puncture from each of the snake's fangs was apparent. They were about one inch apart, of about the size of "a type-writer period," and they were still bleeding a little when they were first seen, but both became whitish when alcohol was applied to them. They had been made through the man's coarse cotton overalls and through his cotton sock.

An irregular area about 3 or 4 inches wide and from 5 to 6 inches long covered the outside of the foot and leg, mostly below the bites, which were above the level of the shoe top. This area was very puffy and ashy, in striking contrast to the shiny blackness of his skin elsewhere.

He was at the time of his arrival only suffering from pain at or about the wounds; and he had no pain about his heart for an hour when he said that he felt as if he "had been running very hard." (The influence of suggestion was carefully avoided here.) He declared all along that his flesh all over him was quivering, which may have been due to his excitement or to hard riding.

A tube of McFarland's serum was injected at once, some in two places near the fang wounds, and the rest of it into the loose tissues of the flanks. He said that the pain grew more and more severe about the spots on the ankle where he had been injected. Then, a 60-minim syringeful of Calmette's *sérum antivenemeux* (dated 1900), caused him to say that the "pain is not too bad." (Bahama *patois* makes "too" do duty for "so" or for "very." W.F.A.)

He returned to his employer's home about four hours after he had been bitten. The affected ankle and that side of his foot were swollen somewhat when he left, and it swelled a little more that afternoon; but it had almost subsided on the next (Sunday) morning. He complained of a severe accession of pain after his return home and at 2 o'clock Sunday morning he received another syringeful of Calmette's serum.

He walked from his cottage up to his employer's residence Sunday morning after breakfast. His ankle appeared to be a little sore and slightly swollen, but he seemed to be all right otherwise.

A day or two afterward—not later than the 18th instant—he was frightened by the gloomy predictions of future miseries, by his associates; and he called in Dr. J. H. Lloyd of Fort Pierce, Florida. This physician told him that he was well and most fortunate. He returned to work four days after having been bitten, and he has continued free of ailment and of any disability.

The snake was killed almost immediately after it had bitten him, its head being shot away with a shot-gun. It was examined and measured by the patient's employer, who has killed very many Florida rattlesnakes. He declared it to be fully three feet long without its head, and, in his opinion, in every way capable of doing deadly work as far as could be determined.

Perhaps I should add that I consider that, but for the telephone, considerable valuable time would almost inevitably have been lost. This instrument furnishes grounds for more hopeful results in all such cases in the future; while Gibson's method of concentrating antitoxins permits us to hope eventually to do much to save the victims of Florida rattlesnakes, especially, and of the "cotton-mouth" moccasins.

I have quite recently been surprised to find the belief widely current among laboratory workers in the United States that deaths of adults from rattlesnake-bites are so infrequent as to be without importance. One celebrated investigator and teacher declares that he has been unable to authenticate a single such death and but a few in children.

I hope soon to be able to combat effectively this most erroneous opinion; in fact, I may say now that I know from reputable persons of more than 30 deaths from the bite of this snake—all of the victims having reached adolescence at least.

Increase of Insanity.—Philadelphia keeps pace with the reported general increase of insanity throughout the United States. The latest report of the Philadelphia Hospital for the Insane shows a total of 1600 patients, an increase of 109 during the year. The total increase for the past ten years is 75 per cent.

SCARLET FEVER.

BY

JOSEPH F. CHMELICEK LUHAN, M. D.,
of New York City.

To the Editor of American Medicine:—During the last five years I have treated in my private practice 129 patients with scarlet fever without a single death or serious complication. These cases occurred among poor workingmen's children, without trained nurses, or intelligent help, in tenements, under most unfavorable sanitary conditions. They were not confined to one particular locality, but were scattered all over greater New York. The order of cases was, 9 in Long Island City, 17 in Bronx, 11 in Harlem, 64 in Yorkville, and 28 in different parts of Brooklyn, Winfield, Woodside, Astoria, etc.

W. Tiliston and E. A. Locke[1] have studied the blood in 34 cases of scarlet fever and their results confirm me in the theory that it is the condition of the blood which is the direct cause of the paralysis of the heart, which induces death in the majority of fatal cases, especially in children. A slight secondary anemia was present in all but the very mild cases, the fall in hemoglobin being from 5 percent to 25 percent, return to normal condition occurring after a period of several weeks. A hyperleukocytosis was almost invariably present. The count rises abruptly from the second to the eighth day, then falls rapidly for a few days, then gradually until convalescence is established.

The complications and after effects of scarlet fever are among the most important features in this disease, and these are of such a nature as to make every medical attendant carefully watch every case for their early indication. The complication most frequently met is the inflammation of the kidney during convalescence or at the period of desquamation; this occurring in the form of glomerular and tubal nephritis. Next in order is suppuration of the ear. The throat, of course, should always be examined even in the mildest case.

Treatment.—1. Isolate the patient in the lightest and best room in the house or apartment. 2. Give warm bath. 3. Relieve the bowels by an enema or magnesium citrate. After having done everything possible for the comfort and isolation of the patient, I give the attendant certain directions which I insist on being strictly enforced. I order the patient to be kept on a strict diet of milk with plenty of water and soups.

I do not use antipyretics in any form, except the tepid bath, to which, during the process of desquamation, a little sodium biboracicum may be added, to allay itching. I avoid all depressing agents, and prescribe elixir sulfocarbolate of iron (Luhan) in amber colored 120 gram bottle, giving one teaspoonful every two hours during the day and up to midnight, without stopping, from the first to the fourth day. Then I change to medicine No. 2, elixir sulfcitrate of iron, giving this every three hours for the following four days, and my patient recovers. I feel no concern about the fever no matter how high it is, as this may readily be relieved by the bath and the perspiration following. I like magnesia citrate for the bowels because, (1) children like it; (2) it does not form any chemical incompatible with the elixir; (3) it does the work satisfactorily if given by tablespoon doses. The foregoing dose is for a child from 4 to 5 years old. Under 4, I give a small teaspoonful, over 5–8, half a tablespoonful every 3 hours in mild cases and every 2½ in severe cases. Having prescribed the medicine, be sure, (1) it is compounded by a reputable druggist who uses only chemically pure drugs; (2) that it is prepared fresh every time, and (3) that it is dispensed in amber colored bottles; the compound changes on exposure to light; (4) do not allow the druggist to repeat prescriptions without a written order or verbal instructions; (5) destroy everything left of both medicines after the case terminates, as they soon lose strength by chemical decomposition.

The formula for medicine No. 1 (elixir sulfocarbolate of iron) is as follows:

Sodium sulfocarbolate, . .	5.0.
Tincture iron chlorid, . .	1. cc.
Dilute acetic acid, . . .	1.5 cc.
Solution ammonium acetate, .	10. cc.
Simple syrup, ...	20. cc.
Alcohol, ...	5. cc.
Infusion sambucus flowers, sufficient to make . . .	120. cc.

Dose, 4 cc every two hours.

To the solution of ammonium acetate add the dilute acetic acid, then the tincture of iron chlorid. Dissolve the sodium sulfocarbolate in the infusion of sambucus flowers, add the simple syrup and alcohol and mix the two preparations together. It should make a clear, bright red liquid.

For medicine No. 2 (elixir sulfocitrate of iron) add to 120 cc. of the foregoing mixture 12 cc. of potassium citrate. This makes a pale, bright green liquid.

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[1] Journal of Infectious Dis., June 24, 1905, p. 375.

ORIGINAL ARTICLES.

THE MAKING AND DRESSING OF WOUNDS.[1]

BY
MILES F. PORTER, M. D.,
of Wayne, Ind.
Professor of Surgery and Clinical Surgery, in the Purdue School of Medicine.

Preparation of Field of Operation, and Cleansing of Accidental Wounds.—It is an easy matter to overdo in our attempts to render the field of operation or an accidental wound aseptic. By the use of too vigorous scrubbing, too harsh mechanical means, too hot water, or too strong antiseptic solutions, more harm than good may be done, in that by these measures we reduce the inherent resisting power of the tissues so much that, as an element for evil, it outweighs the germs we destroy. We should hold constantly in mind the fact that this resisting power of the tissues is, perhaps, the most potent single factor in preventing infection, and that it may be materially diminished by too much antiseptic zeal. Let us not arrogate to ourselves duties that nature herself can perform much better. Not that I would be understood as advocating laxity in our efforts toward securing asepsis, but that I would have it understood that absolute asepsis is impossible, that, therefore, in spite of these efforts, there will still be germs left for nature to take care of, and that we must not make it impossible for her to do it. Personally, I find myself in work along this line using more care, more time, more patience, more soap, more water, and less vigorous scrubbing, less curetment, and weaker germicides. Strong antiseptic solutions kill and inhibit the activity of tissue cells as well as germs. Abrasions and excoriations of the skin, produced by strong soaps and stiff brushes, and injuries done to the wounded tissues by the curet, are as great sources of danger as are the germs and dirt removed by these measures.

Location of Wounds.—Wounds should be located so as to give easy access to the parts one desires to reach, and to permit perfect and prompt functional recovery with the least possible inconvenience and deformity. First of all, the surgeon aims to save the life of the patient; second, to restore him to usefulness; third, to save him unnecessary pain; and fourth, to reduce to a minimum the deformity. Hence, it frequently happens that in locating wounds the questions of functional result and comfort must give way to the more important one of life, or that in other cases, the question of functional restoration must over-ride that of deformity. It should not be forgotten that these questions, even including that of the life of the patient, vary in comparative weight and importance in different cases.

A poor father of a large family will jeopardize his life by selecting the most dangerous operation in the hope of being restored to usefulness, rather than the less dangerous one which promises him greater chances for life but offers him no hope as to his usefulness. With some patients the question of time is more important. Such a patient may elect to suffer pain or deformity rather than to sacrifice the time necessary to escape these ills. Others there are who will elect to sacrifice time and money simply to avoid either pain, deformity, or both. A disfiguring scar on the face, neck, or arm of a man may be of little moment to him, while such a scar would be by some women regarded as a calamity, and very properly so.

If it may be done without sacrificing more important things, incisions should be made to conform to the natural folds of the skin, or made where they may be concealed by the hair, the beard, or the clothing. Frequently, one sees disfiguring scars on the face and neck which might have been avoided by observation of this simple rule. By a little care in the direction and location of incisions one may avoid hemorrhage and paralysis and add to the firmness of the cicatrix. In illustration of this, operations on the face and operations for the cure of inguinal hernia might be mentioned In the former, incisions following the course of distribution of the seventh nerve will be safe, while incisions made transversely to the axis of these nerves may be followed by a disfiguring paralysis. In hernia operations, the avoidance of the nerves, especially the ilioinguinal and genitocrural, will materially enhance the chances for a satisfactory recovery.

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[1] Read by invitation at the meeting of the Auglaize County Medical Society, Wapakoneta. O., Dec. 14, 1905.

It is not wise usually to locate wounds so that the resulting scar tissue will be subject to stretching, friction, and like traumatisms.

Size of the Wound.—Wounds should be as small as may be compatible with accurate, reasonably rapid work, without necessitating undue traumatism from pulling, stretching, etc. To maul the edges of an inadequate abdominal wound in an unnecessarily prolonged effort to dig up an adherent ovary, tube, or appendix, instead of making it possible to do the work quickly, accurately, and with much less trauma by extending the incision by a clean cut, is not good surgery. On the other hand, unnecessarily large wounds are to be avoided because they add to both the immediate and remote risks of the operation. There are times when it is wise to make two small wounds rather than one large one. For instance, suppose one must do an interval operation for appendicitis, without pus or serious adhesions, in a patient suspected of having gallbladder or stomach trouble. It is wiser under these circumstances to remove the appendix through a small gridiron incision and explore the gallbladder or the stomach through a separate incision made for the purpose. It should be borne in mind in settling this, and many other questions of surgical technic, that the personal equation is a very important factor. Jones may require a two-inch incision for work that Smith could do equally well through an incision only an inch long. Of course, nothing here said is to be construed as excusing any surgeon from mastering the best methods of operating. For many operations there are several methods equally good. One may be the best for one surgeon, and another the best for another.

Making of Wounds.—Separation and displacement, rather than division of tissues should be the rule. That to this rule there are many exceptions but serves to add weight to the general proposition which it sets forth. Transverse division of muscle, tendons, and fascia diminishes their functionating power and should be avoided when it is possible to do so without thereby adding greater risks. By following this rule in abdominal work many hernias have been avoided, and by applying the same rule to the neck, face, and hand much deformity may be avoided, and, in the case of the hand especially, a more perfect restoration of function be achieved. Contraction of a muscle, through which an opening has been made by separating its fibers, tends to close the opening, and the closure becomes closer as the contraction increases in vigor. The reverse is of course true when the muscle fibers are divided transversely. In this same connection we may note the added element of strength and efficiency which comes from avoiding the division or separation of the different layers in parallel or directly superimposed lines. The importance of this principle is especially great in abdominal and brain work because of the danger of hernia following. This principle, when applied, results in diminishing the size of the weak area and necessitating a change in the direction of the viscus which attempts to protrude, which change results in a diminution of the propulsive force. A man can run or a ball can be thrown with greater force and rapidity in a straight line than in a curved or zigzag one. Tissues that are cut should be cut with bold strokes, and by sharp instruments, the idea being to avoid laceration and contusion which inhibit healing.

Closure of Wounds.—The best method of closing wounds is that which restores the parts most nearly to their normal relations, and retains them in this position until healing is complete, with the least possible risk and inconvenience to the patient. The less trauma inflicted in wound closure, the better. Every additional wound is an added element of danger, and this element of danger is of especial moment if these added wounds involve infected tissues, as the skin, which is never entirely free from infected germs, and all tissues involved in accidental wounds. Sutures, at best, are a necessary evil and therefore to be avoided when it is possible to achieve good results without them. Especially to be avoided are sutures through the skin, for the skin, as before indicated is never germ free, and beside, sutures through the skin often produce deforming scars.

When sutures are necessary, buried ones of absorbable material are the best, save in the presence of infection, and even in infected cases they may often be used to advantage. When, because of infection or for other reason, absorbable sutures in layers are contraindicated the figure ∞ suture of silkwormgut, extended, if need be, to form three or even four links, may be used. Or the layers may be coapted with a running suture of like material, or of silver wire, the ends of which are left protruding so that they may be withdrawn when healing is complete. Permanent sutures are to be avoided save in surgery of the stomach, bowel, gallbladder, and the peritoneum-covered portion of the bladder. Time will not permit me to say more upon this subject at present. Those who are interested are referred to my article on "The Closure of Wounds" which appeared in the *Journal of the American Medical Association*, July 25, 1903. In consideration of the importance of the matter, however, I feel warranted in calling your attention to these photographs (Figs. 1, 2, 3, 4, 5) which show the advantage of the buried suture over the through-and-through suture in the matter of scar formation. Important as this advantage is, however, especially in operations on the faces of females, it is not of so much importance as is the avoidance of sepsis. There can be no question but that wounds closed by through-and-through sutures become infected oftener than those closed with buried sutures. The through-and-through temporary suture and the buried permanent suture deserve to be relegated to oblivion save in exceptional cases.

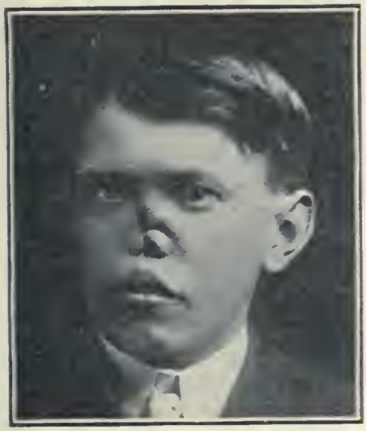
Fig. 1.—Front view of R. before operation.

Dressing of Wounds.—The first dressing applied to a wound should be allowed to remain undisturbed until healing is complete unless hemorrhage, infection, pain, or other condition makes a change of dressing imperative. To dress a wound frequently is to court infection. To uncover a wound just to see "how it is getting along" is to satisfy an idle curiosity at an unwarranted risk to the patient. If the primary dressing is properly done, even contused and lacerated wounds, accompanied or not by fracture of bones, may usually be left untouched until union of the soft parts is complete or at least until all denuded surfaces are well covered with granulation tissue. Frequently the dressings of wounds of this character soon become stained through with blood. Under these circumstances it is better usually to sprinkle the moist area with an antiseptic powder and apply an additional aseptic dressing than to remove the first dressing and apply a new one Dressings thus saturated with blood make, when they become dry, most excellent splints. And

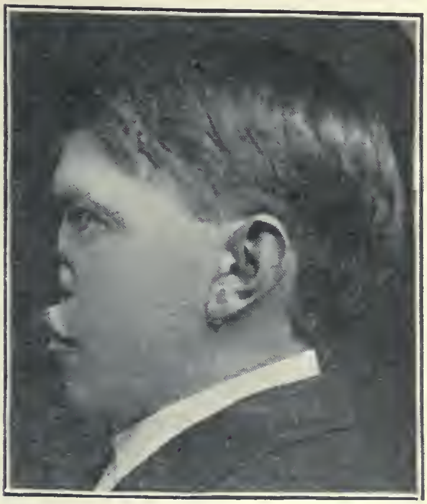
Fig. 2.—Side view of R. before operation.

just here let me urge the importance of local and general rest as curative and preventive measures in the treatment of wounds. In local rest procured by splints and other means, and general rest, attained by putting the patient to bed, we have measures of preventing infection, and of curing it, when it exists, second to none.

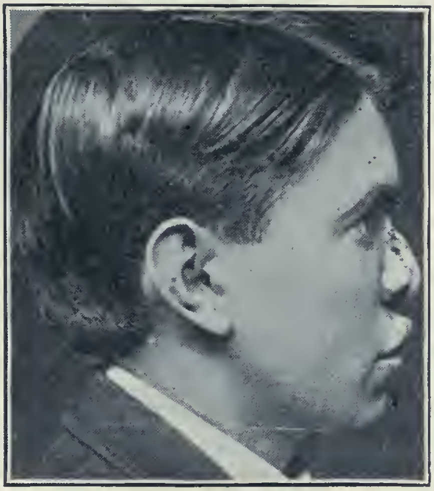

Fig. 3.—Side view of R, 10 days after first operation.

Wounds requiring drainage may often be closed up to the drainage-tube and dressed as wounds that are completely closed except that the drainage-tube is allowed to project through the dressing far enough to prevent soiling thereof. Adequate drainage may often be obtained through a very small drain. It is often better to make secondary small wounds for drainage and close the larger wound as though infection was not present. Such a procedure is more frequently indicated perhaps in suppurating appendicitis than in any other single class of cases. Extensive, infected, wide-open wounds that are suppurating freely are best cared for usually by covering them with copious aseptic absorbent dressings to be removed as infrequently as consistent. To disturb a granulating surface is to subject the patient to danger from infection. This is true of any granulating surface, but in the presence of suppuration the danger is, of course, greater. Granulations act as a barrier to infection and should therefore never be disturbed except when necessary. With a view to avoiding unnecessary disturbance of the granulations during the changing of dressings, strips of *protective* may be used with advantage in many cases. The irrigation of suppurating wounds and cavities seldom does good and frequently does harm, and hence is seldom advisable.

Drainage of Wounds.—When to drain and when not to drain, and how to drain when it is decided that drainage is necessary, are questions of prime importance. Drainage and dressings are becoming less and less frequent as surgery advances. With the men of most experience, the old axiom, "When in doubt, drain", has been changed to, "When in doubt, do not drain." Drainage becomes necessary whenever the wound secretions are harmful either in character or amount. After extensive operations or traumatisms it is sometimes necessary to provide means for the easy escape of serum and blood. In other cases the wound secretion is infectious and free exit must be provided for it, to prevent sepsis. It is very rare that large openings are required for drainage. Large incisions, or numerous small ones, are often indicated in infected areas for the relief of tension but seldom for the exit of wound secretions. To illustrate, an inflammation of the palm may

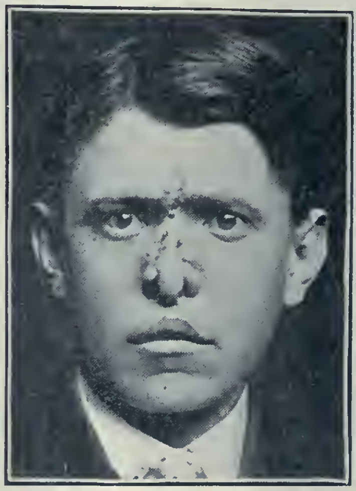

Fig 4.—Front view of R. 10 days after first operation. Flaps taken from forehead to form central part of nose including column. Union completed. Dried secretions appear as scars. All stitches were buried catgut.

require numerous short incisions or punctures, or one or two large ones, to prevent extensive sloughing or systemic infection, but a palmar abscess seldom requires more than one small opening. Again, it may be necessary to make a large wound, as, for instance, in sequestrotomy, but it does not follow that such a wound will need a large drain, much less be left open for the purpose of drainage. Indeed, such wounds do better as a rule when closed, save for space enough for a small drain. Unless the secretion from the wound is exceedingly abundant or thick, drains that act by capillarity will keep the wound more nearly dry. There are two drains in common use, the gauze drain and the tubular drain. As has been said before, the drain that acts by capillarity will keep the wound drier unless the secretion is thick or very abundant, hence, when there is but little or no infection and only a moderate amount of secretion is expected, especially if that be watery in character, the gauze drain is better, while if the secretion is abundant and thick, the tubular drain should be chosen. To illustrate, a large, thoroughly ripe abscess containing shreds of sloughing tissue is opened; here a good sized tube should be used, but after an operation for the removal of an infected gland, a tiny gauze drain is better. In many cases, it is better to change the kind of drainage. Take an operation in an infected area accompanied by a good deal of oozing of blood. Here the object of the first drain is twofold, first, to stop the oozing, and second, to carry the wound secretions off. In such a case the drainage will consist of serum for several days, hence the gauze will remove it and at the same time stop the hemorrhage. Later when the hemorrhage has stopped and the secretion has become purulent it will be better to remove the gauze and substitute for it a tube. In a word, it may be said that tubular drains do better for pus and gauze drains do better for serum. It goes without saying, of course, that not all discharging wounds need drains.

With rare exceptions gauze drains should be kept from direct contact with raw surfaces by rubber tissue or other protective save at the point or points at which they are expected to take up the moisture. The only exception, perhaps, is when the gauze is used for the double purpose of providing for drainage and stopping hemorrhage. And even here the protective should be used to cover all portions of the gauze save that in contact with the bleeding surfaces. In preparing the socalled cigaret drain, the gauze should never be wrapped tightly. Of the tubular drains those made of glass or other hard material have gone practically out of use, and, in my opinion, deservedly so. A drain that is placed in a clean wound to drain serum or blood only, should be removed not later than 48 hours.

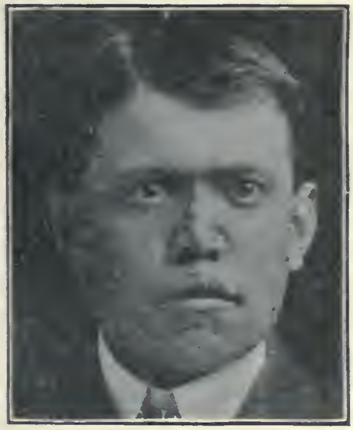

FIG. 5.—Front view of R. after second operation done to efface notches on either side of column and creases along line of union between central flaps and sides. Only two through-and-through sutures were necessary. because of thinness of structures to be apposed, the rest of the sutures being buried. All sutures were of catgut. Note the absence of the scar in the forehead from which a large flap was turned down to from the central part of the nose and column.

A drain placed for such purpose should be allowed to protrude part way through the dressing so that it may be removed when it has served its purpose without uncovering the wound. Not infrequently such drains are made of a few strands of catgut and are allowed to remain until absorbed. Such a drain, however, is perhaps a little more apt to cause sepsis than one made of nonabsorbable material. Fenestra in tubular drains should usually be small and always be placed with wisdom. A tube which is to take secretion from one circumscribed area needs no fenestra. A couple of notches in the end of the tube is sufficient under these circumstances. Fenestra along the whole length of the tube which passes through uninfected tissues, and the distal end of which only is in an infected area is a source of material danger, in that it may disseminate the infection. On the other hand, there are cases in which we want the tube to act like tile in a field, in such cases they should be fenestrated throughout their whole length. It should be borne in mind also that granulations will grow into and fill the fenestra and the tube, if care be not taken to prevent this. An occasional twisting or shifting of the tube will obviate this. The aim should be to discard drainage as soon as it has fulfilled its purpose. Frequently it is wise to shorten the tube by cutting a short piece from the protruding end every day or two, or when through-and-through drains are used they may be fastened in the middle with a silk thread and when the proper time arrives they may be pulled apart and shortened at either end, thus allowing the sinus to close from the center to the surface in both directions. Let me conclude with the following statements:

1. Unwise efforts to produce asepsis may produce more harm than the bacteria against which they are directed. The surgeon's attitude toward nature should be that of a modest cup-bearer, not that of a usurper.

2. Sutures, redressings, and drains are, at best, necessary surgical evils, hence, all sutures should be discarded in favor of the bandage and adhesive plaster when these can be made to serve the same purpose, but when the use of sutures is imperative, then, (a) buried absorbable sutures should be preferred; buried nonabsorbable temporary sutures should be our second choice; through-and-through sutures should be used only on compulsion; and buried permanent sutures discarded except in work on the hollow abdominal viscera; (b) our aim should be to do the first dressing so that it will be the only one needed until healing is accomplished, and when this is impossible, our efforts should be directed toward preventing the necessity of frequent dressing; (c) when in doubt, do not drain, but if drainage is imperative let it be adequate without being harmful, kept up while it is needed, and discarded so soon as it has fulfilled its mission.

THE RELATION BETWEEN TONSILLITIS AND ACUTE ARTICULAR RHEUMATISM; WITH PARTICULAR REFERENCE TO THE PROPHYLAXIS OF POSTANGINAL RHEUMATISM.

BY
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In the Seaman prize essay on the prevention of disease in the army, Major Kean[1] makes the following remark: "The rheumatic group is, in the present state of our knowledge, to be considered under military conditions as nonpreventable, although it is now recognized that acute articular rheumatism is an infectious disease, with its port of entry through the tonsil." This paper will deal first, with the relation between tonsillitis and acute articular rheumatism, and second, will detail some clinical researches which tend to show that specific treatment of the angina may prevent the after-development of rheumatism. In the treatment and prevention of disease there are probably no factors of greater interest than the method by which, or the gateway through which disease attacks the organism. Given a clear idea of either or both of these factors our attack, therapeutic and prophylactic, can be delivered with greater precision and certainty.

The fact that acute articular rheumatism is preceded in a large proportion of cases by acute follicular tonsillitis is common knowledge; yet precise observations are lacking and the relation between the two is by no means universally acknowledged. The present status of our knowledge of this subject is epitomized by St. Clair Thompson[2] about as follows:

1. It is undoubted that a certain number of cases of acute rheumatism are preceded by angina in a proportion varying from 30 to 80 percent.

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[1] Journal of the Association of Military Surgeons, January, 1906.

[2] Practitioner, January, 1901.

2. Both rheumatism and angina have many etiologic points in common; season of the year, cold, wet, fatigue, depression, vitiated air, etc.

3. The connection between angina and rheumatism, though undoubted in a number of cases, is not clearly established.

4. The tonsil may be the port of entry of the rheumatic virus, and this even though the naked eye appearance of the throat gives no indication of its being affected.

5. The particular affection of the throat which is associated with rheumatism is not yet established, apparently it is not peritonsillar abscess (quinsy).

6. Peritonsillar infection does not appear to be arrested by the administration of antirheumatic remedies. Many cases of lacunar tonsillitis, on the contrary, are considerably benefited by the administration of salicin or sodium salicylate. That this action proves the rheumatic nature of the disease cannot yet be accepted.

7. The question requires further research in two directions, one in differentiating the various forms of angina, and settling the one which is associated with rheumatism; the other in further research to discover the true nature of rheumatism.

What we need is cumulative evidence, and with this idea the following data are offered. To begin with, the retained records of Fort Russell for a period of 38 years have been studied. These records show 2,275 cases diagnosed as acute tonsillitis, the large majority being classed as follicular and bilateral. In the same time there were 1,293 cases diagnosed as acute articular rheumatism. These cases have been arranged graphically in two charts. In chart No. 1 they are grouped by months as they occur. The solid line indicates the number of cases of acute tonsillitis, the broken line of cases of acute articular rheumatism. It will be observed that the culmination of the curves is in January, showing at least a marked seasonal correspondence between the two diseases. Chart No. 2 is more interesting. In this chart the solid line shows acute tonsillitis and the broken line acute articular rheumatism. The observations are grouped in periods of three months to abbreviate the record. The fluctuations are quite marked but the correspondence between the groups is very noticeable, much more so in some years than in others and particularly so when the number of cases of acute tonsillitis was greater than usual. This seems to indicate that the epidemic or infectious form of tonsillitis shows a large proportion of following rheumatism. Personal observation seems to bear this out.

In studying the records, 276 cases of articular rheumatism were traced in which there was absolute record of preceding tonsillitis, a proportion of 21.3 percent. These figures gave a rather unusual opportunity to define the period of incubation. In all the 276 cases the least period of separation between the two diseases was 6 days and the greatest 60 days. The average period was 29.77 days. I think it may be assumed that some of the long periods named were coincidences. Eliminating these cases, therefore, the extreme incubation period varied between 3 days and 30 days with an average of 24 days. These are the first figures on the subject with which I am familiar and the result

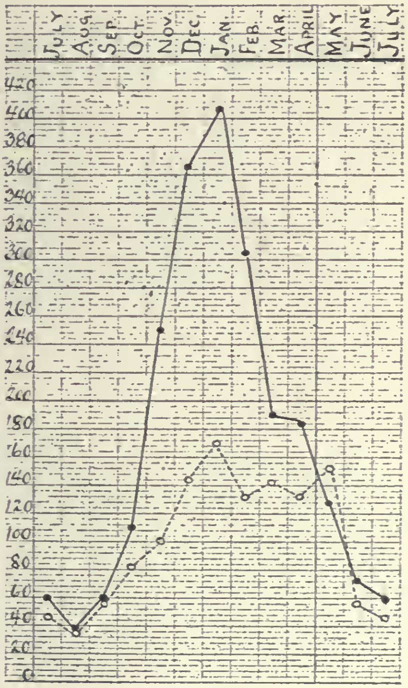

Chart No. 1

was at first rather a surprise to me because I think the average incubation is commonly estimated at a much shorter period.

These observations on the etiologic relation between the two diseases are strongly reinforced by many studies regarding it in the literature. I give one or two of these briefly because they have considerable bearing on the rationale of the treatment to be outlined. Thus Menzer[1] has shown in several cases, diplococci and streptococci in the bloodvessels and lymph spaces of the tonsillar and peritonsillar tissues. Forchheimer[2] has demonstrated bacteriologically that infection of the tonsils preceded articular rheumatism. Burch[3] has shown the same thing in relation to the cutaneous exanthems considered to be rheumatic in character as erythema nodosum, erythema multiforme and peliosis and he reports four cases of rheumatic purpura associated with tonsillitis. In the discussion of the paper read by Packard, May 3, 1899, before the Association of American Physicians on endocarditis of tonsillar origin, he speaks of demonstrating the staphylococcus in the tonsils. It is also to be remembered that the local reaction in the tonsil to the entering poison may be very slight. Litten reports two cases of acute articular rheumatism, one with endocarditis, the other without complication. In both of these there had been slight reddening of the pharynx and swelling of the tonsils of which neither patient had complained. It is also conceivable that the virus may enter at the tonsils and that these organs may show neither macroscopic nor even microscopic evidence of disease.

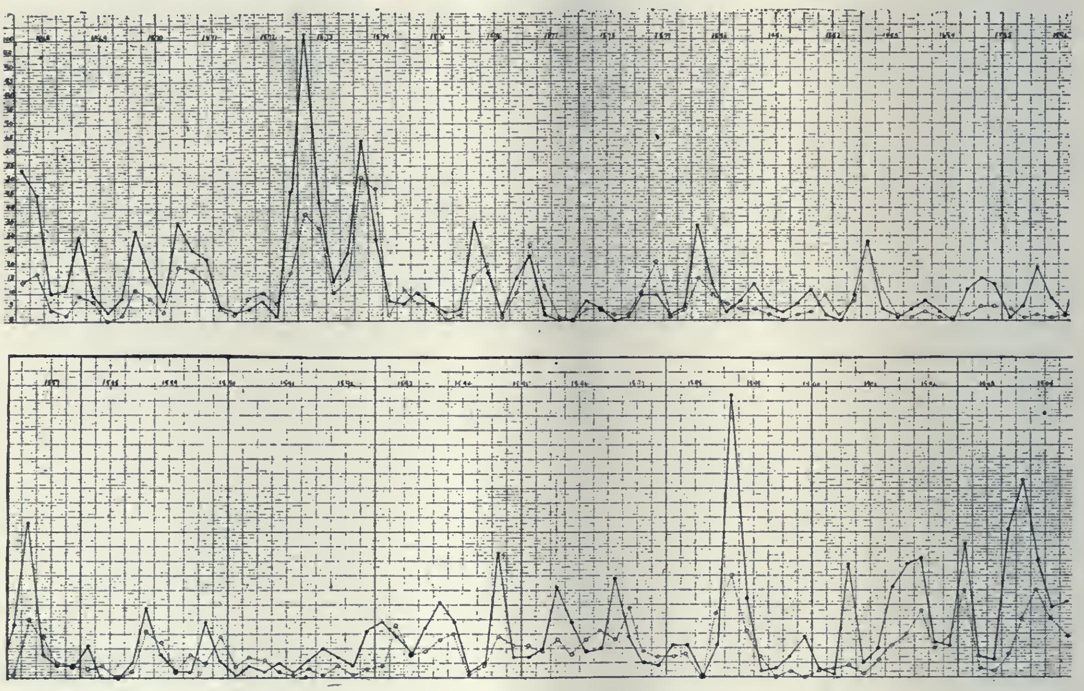

CHART NO. 2.

I think some confusion has arisen in this question and a sharp distinction must be made between the tonsillitis which may be regarded as the primary point of inoculation and is followed after a distinct period of incubation by the development of rheumatism, and the sharp tonsillar complication which occasionally is observed in florid cases of rheumatism. These two conditions must be held distinct.

It occurred to me that if these tonsillar reactions are actually rheumatic in their nature from the beginning, then vigorous local treatment with the derivates of salicylic acid should not only control the disease, but might also serve to neutralize the *materies morbi* at the very threshold of invasion. With this point in view systematic clinical studies were begun and have been carried through somewhat more than a year. Hare records the signal good that the salicylates do in rheumatic tonsillitis when administered internally. Thompson speaks in the same way. The effort here made, however, is directed primarily to a local effect.

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[1] Deutsche med. Wochensch. 1901, No. 9, Berlin. klin. Wochen., 1902, 1 and 2.

[2] Archives of Pediatrics, September, 1902.

[3] Berlin. klin. Wochen., 1900, No. 45.

Nearly all forms of the salicylates were tried with only partial results. Finally acetyl-salicylic acid (aspirin) was used. In trying this drug its well known properties, first of dissolving in weak alkaline solution, and second of breaking up into nascent salicylic acid in the presence of alkalis were thought of. Rather to my surprise, investigation of the tonsillar secretions in acute follicular tonsillitis showed practically, without exception, that these secretions were sharply alkaline. Notwithstanding, the plan of treatment finally evolved included the free use of a saturated solution of sodium bicarbonate on the tonsils as a detergent. This was followed by the free local application of finely powered dry acetyl-salicylic acid (aspirin) directly to the tonsils. At first a number of patients also received acetyl-salicylic acid internally, but as we gained experience in the treatment, it was found that the cases in which the drug was used locally only, did exactly as well as the others. Since then the internal use of the drug has been discontinued. The treatment of acute follicular tonsillitis in this hospital may then be summarized as follows. On admission a full mercurial purge is given. Thereafter the throat is cleansed with a gargle of a saturated solution of sodium bicarbonate. In those patients who cannot use a gargle freely and easily, a spray is employed. Immediately following the gargle, finely powdered acetyl-salicylic acid is rather firmly applied to the tonsil with a cotton tipped wooden probe. This method might advantageously be replaced by the use of a powder blower with a vigorous blast. Applications are made thrice daily.

The immediate results of this treatment have been extremely satisfactory. I think anyone who has experienced the disease will agree that there is hardly any other acute affection in which the attendant malaise reaches so high a degree and in which the local suffering, which marks every effort at deglutition, is so constant and annoying. With this plan of treatment complete local comfort may follow the first or second application of the remedy. The most striking change takes place coincidentally in the appearance of the tonsils. The redness and swelling rapidly disappear and usually within 20 hours the tonsils become very markedly blanched; and they are blanched to such a degree that they may appear even paler than the normal tonsillar tissue. These appearances also involve in most cases, the pillars of the fauces. With these changes the patient usually becomes entirely comfortable and convalescence is rapid and uninterrupted. No secondary erosions and ulcerations are observed. The average duration to complete convalescence has been about three days. My assistants, with whom I elaborated this plan of treatment, and who helped me carry it out, agreed that no treatment they had hitherto employed equalled it in rapidity and certainty.

But more important results seemed apparent in the way of preventing postanginal rheumatism which was after all the purpose with which the study had been begun. After eliminating all doubtful cases we have now 120 cases in parallel series of 60 cases each. These series were made under exactly the same conditions and were carried through simultaneously, the patients being taken in alternation as they appeared for treatment. In the first series the patients were treated locally with most of the plans of treatment commonly used in acute tonsillitis, such as guaiac, hydrogen dioxid, tincture chlorid of iron, sodium bicarbonate, Monsel's solution, glycerin and capsicum, in conjunction with fever mixtures and refrigerants. In this series the average duration of the disease was six days; many of the patients had extensive swelling of the neck and fauces with severe constitutional disturbances. Superficial and deep ulcerations of the tonsils were common. *Nine* of the patients subsequently developed acute articular rheumatism, or 15 percent of the total number. In the other series treated with acetyl-salicylic acid as described above, the average duration of the disease was three days. No such extensive swellings were observed; there were no severe constitutional disturbances and no tendency to erosion of the tonsils. There was almost complete abolition of the unpleasant odor usually observed on the breath of these patients. Finally, *in this series not one case of rheumatism developed.*

If these observations can be substantiated, their importance is very great. It is realized that the series reported is not large enough to be much more than suggestive. These notes are published in the hope that wider investigation and accumulated numbers of cases may decide their significance. Personally, I believe that a perfected therapy along the line indicated in this paper will largely, if not wholly, prevent the development of postanginal rheumatism. Of one thing I am certain, that the treatment herein outlined is remarkably efficient and satisfactory in the management of the primary tonsillitis.

THE SURGICAL TREATMENT OF ANEURYSM BY THE INTRASACCULAR METHOD OF SUTURE (ENDOANEURYSMORRHAPHY), MATAS.

Synopsis of conclusions based upon the reports of five operated cases: One abdominal aortic; two popliteal; one subclavian, and one arteriovenous of the femoral artery.[1]

BY

DR. RICARDO LOZANO.

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The original report embodies the records of five patients suffering from aneurysms in the regions indicated in the title of the communication which I have the honor to present to the Surgical Section of the Fifteenth International Medical Congress.

In each instance the operation was undertaken with the intention of applying the method of arteriorrhaphy or intraaneurysmal suture (endoaneurysmorrhaphy) devised and put into practice by Dr. Rudolph Matas of New Orleans and described by him in the Annals of Surgery, N. Y., February, 1903. I will not attempt to describe this method on this occasion as it would lengthen this communication unnecessarily. I have discussed it fully elsewhere in several communications as will be seen in the references at the end of this article. It is my purpose on this occasion, to state as briefly as possible the results of my personal experience and only to present conclusions, as the individual cases have been reported with greater detail elsewhere.

Of the five patients operated upon, two were cases of popliteal aneurysm. Both were operated upon by the intrasaccular or intraaneurysmal method of suture. One of these cases was cured radically, promptly and without incident; the other recovered after undergoing an amputation of the leg, made necessary by gangrene which began in the foot of the affected side and was a direct sequel of complications occuring in the operation The first of these popliteal aneurysms occurred in a young bricklayer, on whom I operated on April 23, 1903, nearly two months after reading Dr. Matas' article in the Annals of Surgery which was published in February of the same year. As far as I have been able to ascertain, it is the first operation of its kind recorded in Spain. The patient was discharged from the hospital 20 days after the operation, so completely restored and well that he at once resumed his occupation as bricklayer. The collateral circulation was promptly reestablished, and a few hours after the operation, could be distinctly felt in the foot. The sac in this case was of fusiform type and presented four openings in its interior, one at each end, corresponding to the proximal and distal orifices of the main artery, and in the middle of the floor, two openings corresponding to the two collateral vessels. All of these were sealed by suture and the sac was obliterated by infolding its walls and approximating them with buried sutures in tiers. The skin wound closed without drainage. The method adopted was therefore that of the obliterative type described by Matas.

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[1] The author's synoptical translation of a communication presented by him to the Fifteenth International Medical Congress, held at Lisbon, April, 1906; Section of Surgery. Contribution to the discussion of the subject selected by the Committee on Official Program: "Arterial and Venous Surgery: Modern Acquisitions."

In accounting for the occurrence of gangrene in the second popliteal case which I operated by the same method, I believe this unfortunate complication could have been avoided if the popliteal vein had not been injured and sacrificed in the course of the operation.

The patient with traumatic subclavian aneurysm was cured radically and recovered with complete functional restoration of his arm, which had been greatly weakened by the compression of the brachial plexus as well as by the prolonged edema. The patient was a soldier just returned from the Philippines, aged 35 years, and profoundly alcoholic. The aneurysm appeared about four months before the admission of the patient to my clinic (November 1, 1905) and was operated upon by internal aneurysmorrhaphy on November 21, 1905. It was found to be a subclavio-axillary aneurysm, extending from the second part of the subclavian to the second division of the axillary. Provisional hemostasis was obtained by the application of a ligature to the main trunk, inside of the scalenes. This apparently controlled the circulation in the sac, as shown by the diminished size of the tumor and the suppression of pulsation and bruit. An incision was then made throughout the whole length of the sac, from the clavicle to the axilla, evacuating a large quantity of blood and clot. As free bleeding continued, a careful search was made for the collateral vessels supplying this flow, in the interior of the aneurysmal cavity. Two openings corresponding to the two important vessels, the superior intercostal and the internal mammary, were found and sealed by sutures. Then the afferent and efferent orifices leading to the main artery were also sutured; finally the sac itself was obliterated by a series of buried sutures. The radial pulse returned and could be felt six hours after the operation. The normal color and even sensibility returned to the hand. A slight stitch suppuration in the wound followed but in 15 days the whole line of incision had healed and the patient was discharged perfectly well. Three months after the operation he reported again to confirm his complete recovery, showing that he had regained almost perfect control of his arm and fingers as in the normal condition. A slight edema of the forearm and some rigidity in the movements of the fingers alone remained to testify to his previous disability. The sac in this case was enormous in size, extending from the scalenes to the midaxillary space, and bulged above and below the clavicle so as to leave a very thin sheet of tissue between the skin and the sac.

The extirpation of the aneurysm in this case would have been fraught with great peril on account of the adhesions to the subclavian vein and the brachial plexus, which were intimately incorporated in the sac walls, and with the pleura. The result of the intrasaccular method in this case could not have been more satisfactory.

The patient with the abdominal aortic aneurysm, involving the bifurcation, was an arteriosclerotic, alcoholic subject, aged 59 years. Abdominal section on November 4, 1905, exposed a very tense, very thin walled, fusiform sac as large as an orange, extending about 3½ inches into the abdominal aorta above the bifurcation, and including both common iliacs on the distal side. Prophylactic hemostasis was attempted with three slender, elastic metal clamps, one applied to the aorta on the cardiac side of the aneurysm and one on each iliac artery immediately below the sac. The aortic walls were crushed and crumbled under the pressure of the upper clamp. It was found that hemorrhage occurred from the aorta wherever forci-pressure was applied as a result of the laceration of the coats of the vessel by broken platelets and fragments of calcareous and atheromatous material in the degenerate and brittle vessel walls, as these were crushed by the clamps. To control bleeding from this point, another clamp was applied higher up on the aorta; and for the time being, complete hemostasis was obtained. The sac was then incised longitudinally from one end to the other, and the walls found to be too thin to admit of a reconstruction of the artery by arteriorrhaphy. Three large orifices, one above, leading to the aorta, and two below, leading to the iliacs respectively, were sealed by separate, interrupted sutures; two openings of large collaterals, visible in the middle of the sac (lumbar arteries) were also closed by suture. The sac was then obliterated by a series of continued buried sutures and then covered with peritoneum which had previously been dissected away to expose the aneurysm. When the three clamps were removed there was no bleeding in the sac and no sign of leakage along the suture line. On the other hand, the aorta, which had been clamped above the aneurysm, bled through a number of minute lacerations caused by calcareous particles which had penetrated through the walls, as had happened after the application of the first forceps. To control this bleeding, another (third) forceps was applied higher up and allowed to remain *in situ* as the only available means, at that time, of arresting a continuous hemorrhage. No ligature could have been applied effectively under these extraordinary circumstances. The abdominal wound was then closed leaving the clamp projecting out of the cavity, and beyond the dressings. At the close of the operation the general condition of the patient was fairly good though the pulse was weak (120). The feet were warm though no pulsation was felt in the femorals. Reaction came on fully in two hours. Patient died at 7:30 p.m., eight hours after the operation with all the signs of an internal hemorrhage. No autopsy was allowed.

In the arteriovenous aneurysm of the femoral traumatic it was impossible to apply arteriorrhaphy because after a preliminary exploration and examination of the tumor, I found it impossible to distinguish the artery from the congeries of veins that surrounded it and that were adherent to the aneurysmal sac. Some of these veins pulsated like arteries and the artery in places looked like a vein. Fearing that I would not be able to unravel this tangle of vessels and that I would do an injustice to the method of suture by an injudicious attempt to apply it, I extirpated the sac with its attached vessels, *en masse*. This patient was operated on October 17, 1905. He is a robust and healthy young man, aged 23, and recovered rapidly and completely with functional integrity of the affected limb.

To sum up, then, of my five patients four were treated by the method of the intraaneurysmal suture. Of these, as previously stated, two recovered completely, one recovered, also, after the amputation of the leg, and the fourth died (the abdominal aortic aneurysm) as a result of the operation. I have already accounted for the occurence of gangrene which compelled amputation in one of the popliteal aneurysms. The death of the aortic aneurysm is easily accounted for by the collapse and shock which came on after hemorrhage had occurred in the period of reaction after the operation. I am satisfied that in this case the method of suture as applied to the obliteration of the aneurysm is blameless, and that the fatal hemorrhage came entirely from the aorta above the sac, where the calcareous tunics had been unavoidably crushed, like a clay pipe-stem under forci-pressure, in the attempt to obtain a complete control of the circulation in the aneurysm before opening it.

CONCLUSIONS.

I. The method of intraaneurysmal suture or endoaneurysmorrhaphy (Matas) will cure aneurysms as radically as the method of extirpation.

II. The method of suture is exempt from the majority of postoperative complications which usually follow the methods classically recommended for the cure of aneurysm and for the control of hemorrhage.

III. The method of suture can be applied to all aneurysms that are surgically accessible in any part of the body, whereas the method of extirpation is not practicable with safety in all regions.

IV. The method of intrasaccular suture is the most favorable for the preservation and development of the collateral circulation, as this is not disturbed in any way by suturing the orifices of the vessels inside of the sac.

V. The method of intraaneurysmal suture in aneurysms of the subclavian is of a comparatively easy and safe execution, whereas the extirpation of the sac is difficult and dangerous.

VI. The suture of the orifices in subclavian aneurysm should be preceded always by a prophylactic ligature applied close to the sac on the cardiac side.

VII. The method of suture in popliteal aneurysms is simple and easy and only requires for prophylactic hemostasis, the application of a circular constrictor on the cardiac side. Great care must be taken, however, not to disturb the perianeurysmal structures and especially the vein, which should always be respected.

VIII. The method of intraaneurysmal suture is the only operative procedure which offers any prospects of radical cure in the treatment of abdominal aortic aneurysms.

IX. The extirpation of abdominal aortic aneurysms is impractical; all of the other methods including the ligature, are unreliable, unsafe and not radical.

X. The technic of the endoaneurysmorrhaphy as applied to abdominal aortic aneurysms must be modified and improved by securing prophylactic hemostasis without forceps, or other methods which would endanger the integrity and vitality of the aortic tunics, especially in dealing with degenerate and calcareous vessels. To obtain the ischemia of the field of operation without disturbing the aorta from its bed or interfering with its nutrition, I would suggest the use of a compressor, shaped like a crutch, provided with a curved crosspiece at the end of a long aseptible metallic handle. If the crosspiece is made semilunar in shape and is covered with soft rubber, it will ride astride the aorta and compress this vessel against the vertebral column, over its peritoneal covering, without exercising injurious pressure when controlled, by the hand of an assistant, outside of the abdominal cavity. The hemostasis obtained by this simple contrivance has the advantage that it will permit the flow of blood to be reestablished whenever the operator may desire to test the line of suture in the aneurysm and thus enable him to reinforce any leaking or weak points before closing the sac. It is also advisable in future to make a careful preliminary examination of the aorta in the vicinity of the aneurysm to determine the condition of its tunics. When marked rigidity from calcareous degeneration exists it will be the part of wisdom to close the cavity without attempting further operative procedures.

XI. Prophylactic hemostasis with forceps, if effective, is likely to injure the diseased walls of the vessel and to precipitate a fatal termination by hemorrhage.

XII. A provisional ligature for hemostatic purposes is open to the same objection and if allowed to remain permanently will defeat the purpose of the arteriorrhaphy as it will surely favor secondary hemorrhage and put out of function a number of collaterals which would be saved by the simple intrasaccular suture. One of the advantages of intraaneurysmal suture over the ligature is that it offers a stronger, more resisting barrier to the blood stream above the line of obliteration, and is thus much less liable to secondary hemorrhage than the ligature, which has invariably failed in every case of abdominal aneurysm operated by ligation up to the present time.

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THE USE OF NAUHEIM BATHS FOR THE FAILING HEART OF ACUTE INFECTIOUS DISEASES, ESPECIALLY IN PNEUMONIA; WITH STUDIES OF THE BLOOD-PRESSURE.

BY
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of San Francisco.

The successful employment of alkaline effervescing baths in the treatment of the heart conditions when a better muscular action was sought, has been so favorable, and the limitation of therapeutic measures by drugs in certain of these conditions has been so extreme, that I determined to see whether one could not apply to acute cases the therapeutic benefit of baths in chronic cases, and particularly to the acute cases in which the muscular alterations were the result of febrile and toxic disturbances.

Potain, Fränkel, Christeller, and others have studied the blood-pressure under the influence of such drugs as digitalis and caffein and fail to show any constant relation between a rise in blood-pressure and an improved circulation. It has been the experience, doubtless, of all of us that the improvement that results to the overworked and often poisoned heart under the influence of cardiac stimulation is not necessarily indicated by an increased arterial tension.

In my investigations I have tried to collect as much clinical evidence as possible to show not only in what way the arterial pressure was affected, but how the performance of other important functions of the body was influenced by this method of treatment. It has been definitely shown that under the immediate influence of Nauheim baths in chronic heart cases there is a slowing of the respiration, a slowing in the heart rate, an increase in the volume of blood in the peripheral arteries with a corresponding increase in arterial tension and in the amount of urine eliminated. The effect of a series of the baths is to prolong more and more the effect of the single bath. The skin at first is reddened and the peripheral vessels remain dilated for several hours. Despite the fact that the skin becomes more accustomed to the stimulating effect of the bath, there is no doubt that the effects are quite the same under favorable circumstances and more prolonged as the treatment is carried on. It has been repeatedly stated by those who direct the administration of baths at Nauheim that these baths are counterindicated in acute conditions and where there is temperature, but I suppose that the difficulty of removing a very sick patient to the public bath-house for the sake of a treatment has prevented much experimental work being carried on in this line at Nauheim.

I made up my mind that the possibilities were sufficient to warrant careful investigation of the subject, and having had an experience with the administration of several thousand baths to chronic heart cases, I determined to carry out this form of treatment systematically with a class of cases in which heart failure was a more or less constant and much dreaded consequence. With extreme difficulty I managed to get a few scattered cases of alcoholic pneumonia, but I was unable to give the treatment a fair trial owing to circumstances that prevented these cases being properly nursed and observed. Through the courtesy of Dr. Frank Ainsworth, chief surgeon of the Southern Pacific Hospital, and the attending staff of the hospitals, Drs. Coffey, O'Connor, and Gardner, I was given the opportunity of trying the treatment on their pneumonia cases.

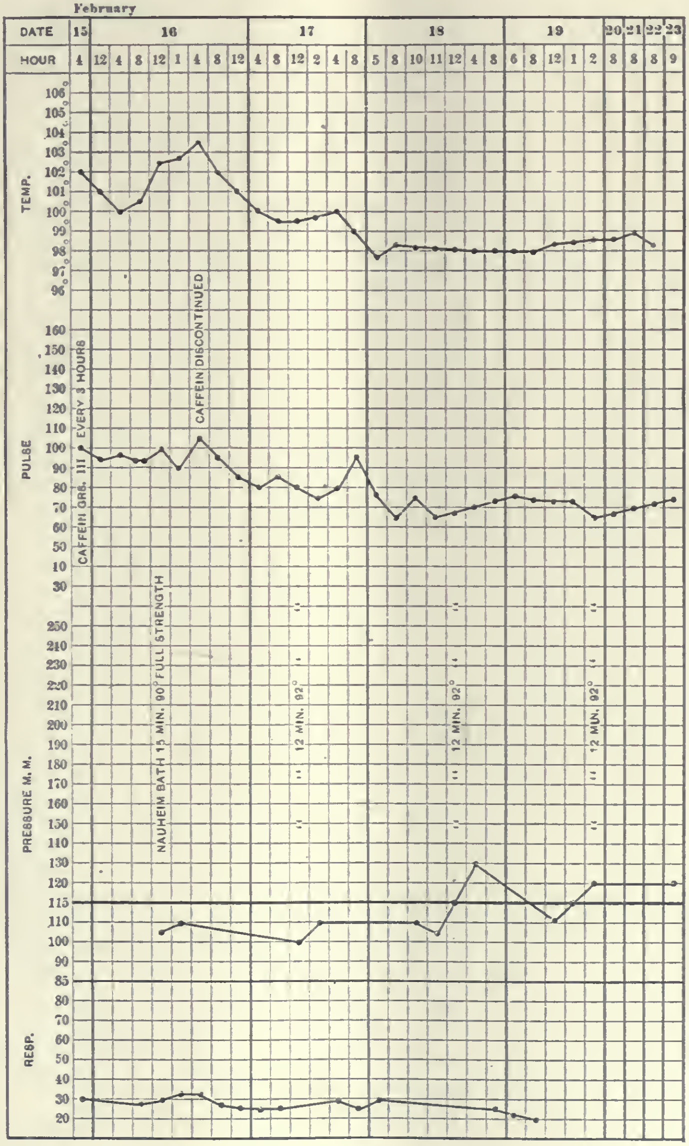
These patients are the laborers on the Southern Pacific lines, occupied in the construction work. Many of them are brought 500 miles to the hospital after the onset of illness. They belong to the class who work in small towns with no way of spending their money except on alcohol. In practically every one of them there was a history of alcoholic excess. They presented the conditions of arterial hypertension that hold with the class accustomed to hard manual labor. They arrive at the hospital frequently on the third and fourth day of their trouble in an exhausted state. Hitherto a majority of these cases have died, and in the study of the cause of death I was impressed with the almost uniform fatality in the cases that were brought down to sea level from an elevation of six or more thousand feet. Many of these men had almost normal temperatures when they came into the hospital and often the heart did not show any striking evidence of weakness. It was a common occurrence, however, to see the pneumonic areas spread, the temperatures rise promptly to above 104°, while the pulse and respiration grew more and more rapid; no treatment seemed to influence at all the fatal termination. The alcoholic also die as a rule.

I studied eight of these cases under the best medical care that the hospital afforded; all died. The toxemia was apparently profound in every case and no amount of stimulation seemed to influence the failing heart.

With due regard to the accepted treatment of these cases, with a feeling that I would at once supplement the bath treatment with such other measures as might be indicated, and with the help of a nurse who had given the baths many, many times to very serious chronic heart cases, I began this treatment on the ninth patient immediately on his entrance to the hospital. The eight cases that had died convinced me that supportive measures could not be begun too soon.

Alcohol was continued in every case and the routine use of digitalis and caffein by hypodermic was inaugurated when there was threatened heart failure. The pulse, respiration, temperature, and blood-pressure were taken before the baths, and contrary to the custom in chronic heart cases, a full strength bath was given at once. The patient was lifted into a portable rubber tub placed by the side of the bed and filled with a hose. The baths, as a rule, were begun at a temperature of 91°. Patients were kept in from six to twelve minutes according to the effect of the bath on the pulse. They were lifted out of the tub and placed on dry towels in bed; after a few minutes of rest the blood-pressure, pulse and temperature were taken again. In practically every instance there was a lessening in the pulse and respiration rate and a rise in blood-pressure. In a few of the cases the rise increased day by day so that by the time of the crisis the conditions of arterial pressure were only slightly below normal. Examination four hours after the baths generally showed that the arterial pressure was still high, although not as high as immediately following the bath. The charts of a few of the cases which are presented for illustration show the usual course of the important changes produced by the baths. An increase in the amount of urine eliminated was an important result noted in a few cases where it was possible to obtain records before the beginning of the bath treatment.

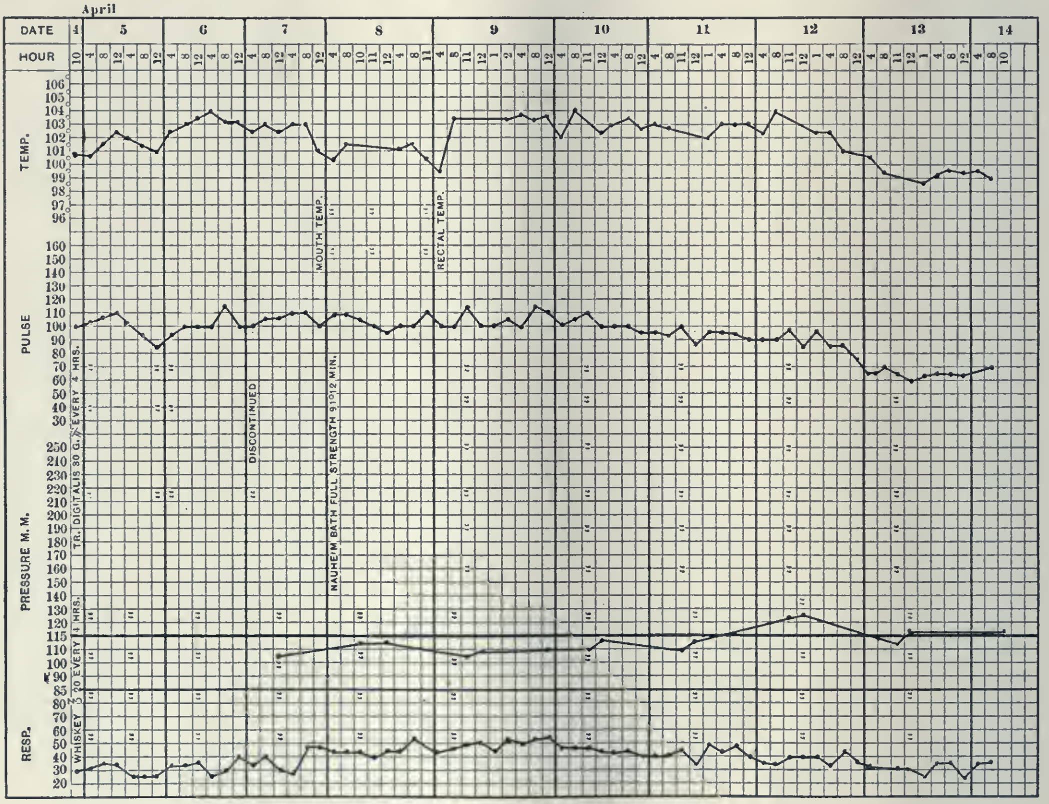
The opposition to the bath was very strong on the part of certain of the patients, but when it was begun early in the disease and they were able to appreciate the more comfortable conditions which followed it, I had no trouble with it. The delirium of the patient was not considered



Case I.

a contraindication and in most cases a restful sleep followed the bath.

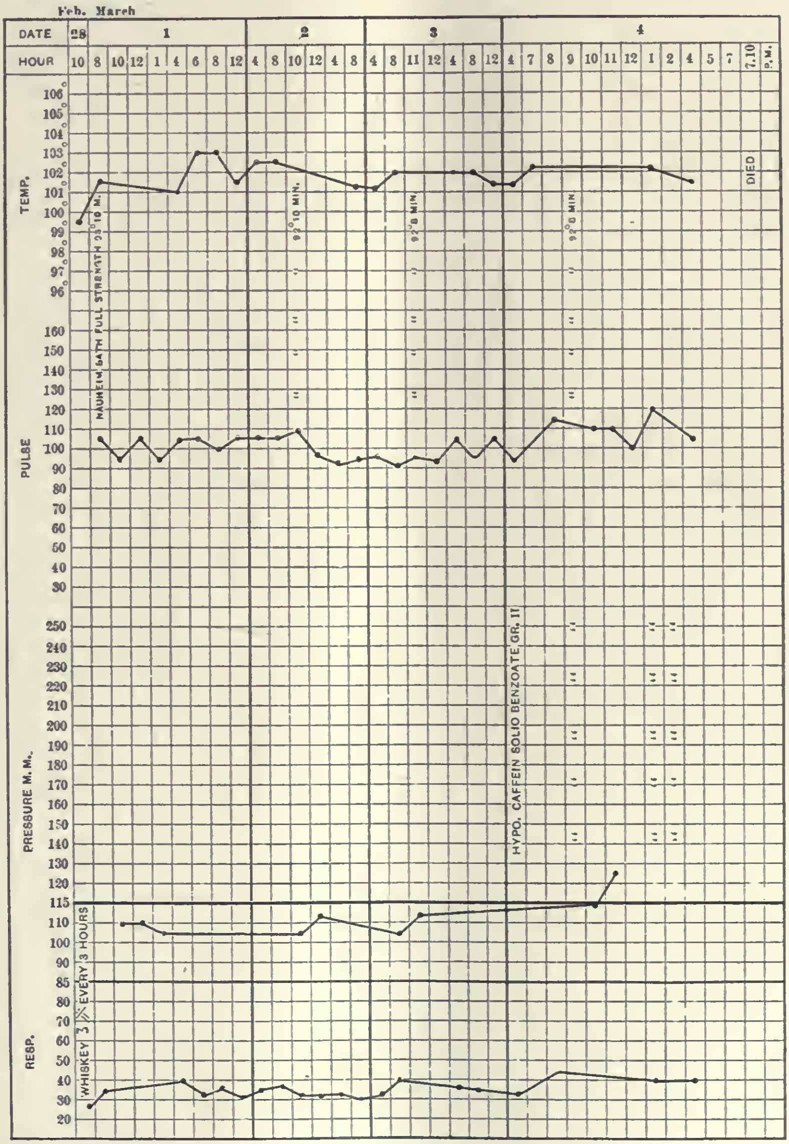
Almost all of the baths were given to patients whose temperatures were above 102°, many of them above 104°. In most of the cases there was a slight fall of temperature immediately following the bath, but lasting only an hour or two. One case, a man aged 57 years, brought in almost pulseless and cyanotic, showed a prompt reaction and a steadily improving condition of the circulation. This patient, however, died on the fifth day, during my absence from town, and I could not help feeling that the enormous distention of the stomach and intestinal tract, which resulted from a failure of the nurse to carry out the orders in regard to cathartics, was responsible for this death. A bacillus which showed deep bipolar stain was recovered at autopsy from lungs and spleen. No pneumococci.



Case II.

The baths were tried in a few cases of typhoid fever, not because the heart needed the support, but to observe the effect on the patient, with a view to a more extensive use of the treatment, should the result seem to warrant it. The record of one case is presented for consideration. Patient was a young adult, in every way healthy, and presenting before the baths the typical lowering of blood-pressure that has been so carefully worked out in typhoid by Potain, Crile, Cook, Briggs, Thayer, and others. Under the Nauheim bath treatment the pressure in the third and fourth weeks was seen to rise steadily, instead of falling. The baths were necessarily discontinued when after a series of ten the patient had a slight hemorrhage from the bowels. They were discontinued for a week and tried again when another small hemorrhage followed shortly after the first bath. I report the case because of the warning in regard to hemorrhage which this case presented.

There seems to be no question of the value of cold baths in controlling the temperature of typhoid and I see no reason why the mineral ingredients should not be added where heart weakness accompanies the condition. It has been pointed out before that the ordinary Brandt bath, when it acts favorably, causes a rise in blood-pressure. Janeway publishes a chart illustrating this, although it was not shown that the bath was uniformly followed by this result. In this connection I cannot confirm the observation of Cook and Briggs that digitalin and strychnin are the most successful means of combating collapse and hypotension in typhoid. I have found among drugs that caffein in two or three grain doses by hypodermic was a much more valuable stimulant.



Case III.

The question is in dispute as to whether the onset of pneumonia is followed by a rise or fall in blood-pressure. As the cases at the Southern Pacific Hospital showed universally a very low blood-pressure, and as they belonged to a class who have as a rule a pressure ranging considerably above the normal average, I do not doubt that the effect of the disease is to cause a fall in pressure.

In several of the cases, I tried first for two or three days the effects of various drugs on the blood-pressure and then the effects of the baths. This was carried on, not only during the acute process, but in one case during the tremendous depression that followed a double pneumonia. Maximum doses of caffein and digitalis were given, but in every instance the average blood-pressure was higher and better sustained on the days that baths were given than on the days that drugs were given. But on the first day of the bath the effect was more striking than later, a fact which led me to believe that the supplemental use of cardiac stimulation by drugs was not to be neglected.

NOTE.—I am distressed to find that the fire has left me charts of only three cases out of the 15 pneumonias treated with baths.

CASE I.—D., aged 40 years, laborer; admitted to the hospital February 15, 1906, 48 hours after a severe chill followed by pain in the left nipple region and a cough with expectoration; he had no care for two days; loss of appetite, and had eaten but little. Previous history negative; smokes and drinks moderately.

Patient is a strongly built man, broad thick chest. Heart condition normal. Urine normal. Temperature, 102°; pulse, 100; respiration, 30. Distinct signs of pneumonia of left side, involving both lobes. Pulse weak and heart tones, though clear, rather weak. Blood-pressure, 102. Patient given Nauheim bath, full strength, 15 minutes' duration. He had a crisis on the fourth day. Was given two hypodermics of citrate of caffein owing to the feebleness of his pulse on his entrance. Except for this no medicine was given him.

CASE II.—David Pork entered the hospital April 4, from Tunnel No 1, with the following history: Attack of pleurisy 1904. Patient drinks occasionally to great excess; smokes constantly. Had been working in the tunnel for some months when on April 1, he was seized with a violent chill; accompanying this was a pain in the left chest, which was increased by coughing; he had a very bad headache and no appetite. He received no attention whatever until four days later when he was admitted to the Southern Pacific Hospital at 9.30 p. m. At this time his bowels had not moved for two days; tongue was coated. Temperature, 101°; respiration, 30; pulse, 100. There was distinct consolidation of the left lower lobe. He was given a pneumonia jacket and put to bed; mustard and flaxseed poultices to chest. I examined patient the morning of April 7. At this time pulse was 106; blood-pressure, 107; respiration, 40; temperature, 103°. There was a consolidation of the whole left side which became more apparent in the upper lobe on the next morning. His heart condition at this time was fairly good, but as it was the seventh day of the disease and no crisis had occurred, the patient was given a Nauheim bath. His blood-pressure the day after the first bath had fallen to 100. The nervous disturbances of the first bath were probably the cause of the increase of fever just prior to the bath. The patient was very comfortable following the bath and was never at any time thereafter in any critical condition, although *the crisis did not occur until the twelfth day.* The chart indicates one interesting fact, that from the second day of the bath the pulse and respiration fell steadily. The temperature was influenced for from four to six hours by the bath and the blood-pressure rose steadily.

CASE III.—Totten, aged 57 years. History of influenza with pleurisy 15 years ago. Admitted to the Southern Pacific Hospital, February 28, 1906, complaining of pain and soreness in the chest and back and limbs, with frontal headache of two days' duration. Chilliness, but no distinct chill at onset. Hard cough preceded the trouble for one month. He was nauseated at the time of the onset of the trouble. Upon his admission to the hospital, patient was in an extremely feeble condition, being almost in a state of collapse. Skin was cyanotic everywhere. Respirations shallow; perspiration profuse. Examination revealed a typical complete right-sided pneumonia. His heart tones could scarcely be heard at all. He was expectorating profusely a blood-stained sputum, was in a state of collapse and rapidly became delirious. Nauheim bath was administered within a few hours of his admission, with the result of a prompt change in the color of the patient from a distinct cyanosis to the ordinary red from dilatation of the peripheral vessels. His color remained good. The general condition seemed to improve steadily. Pulse was always very much fuller and stronger after the bath. Patient continued delirious all the time. In the night of March 4, the beginning of the sixth day of his illness, there were symptoms of heart failure which led the nurse to institute immediately hypodermic stimulation in the form of caffein, 2 grains and digilan, 20 drops. Despite this stimulation the condition grew steadily worse. The breath was labored and the cough continuous. This improved for a short time after one-eight grain of morphine. I did not see the patient on that day until after he died. Examination of the body made immediately after death showed an immense gaseous distention of the stomach and intestines. The medicine which I had ordered for the bowel the day before had not been given until the heart had begun to fail. I cannot help thinking that this was a case badly handled medically and that an enema with any other measure necessary to reduce the distention would have saved this man's life. Autopsy showed the lower right lobe in a state of gray hepatization, the upper still red. The left ventricle was firmly contracted. There did not seem to be any undue distention of the right heart. There was no disturbing condition of the left lung. The general adhesive pleurisy on the involved side, which limited the motion of the lung, may have played some role in increasing the effects of the abdominal distention. Cultures showed in lung and spleen a bipolar straining bacillus, no pneumococci.

THE PRESENT STATUS OF TREATMENT OF RETRODEVIATIONS OF THE UTERUS, WITH A REPORT OF ELEVEN CASES OF PREGNANCY FOLLOWING VAGINAL SUSPENSION OF THE UTERUS.

BY
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of Milwaukee, Wis.

Five years ago I published a monograph on: "The Retroversio Flexio Uteri Mobilis Et Fixata"[1] in which I advocated vaginal suspension of the uterus as a method of operative procedure for retrodeviation of the uterus, because of its very decided advantages over abdominal suspension and abdominal shortening of the round ligaments. Reviewing the subject and my own results obtained within these five years, it is to my greatest satisfaction to find, that the statements as made in the monograph have been verified to their fullest extent and hardly necessitate any modification.

The clinical aspect of retroflexion of the uterus without or together with other gynecologic diseases has, during this period, been the subject of heated controversies between neurologists and gynecologists and offers an interesting study of the observation of the swinging of the pendulum of scientific opinion. While the gynecologist at one time believed he had discovered the salient points of all the pains and aches of his hysteroneurasthenic patients in a retroflexion of the uterus, small cystic degeneration of the ovaries or other pelvic diseases, and was of the opinion that by surgical treatment of these pathologic conditions his patient would be cured, not only anatomically, but clinically from all her hysteric symptoms, he had soon, to his own sorrow, to confess, that his assumption was a regretful error, and he had to be "brought up with a round turn" by his friend, the keenly observing neurologist, who, shrugging his shoulders at his colleague's operations, held that hysteroneurasthenia and retrodeviations of the uterus with or without small cysts of the ovaries are two different diseases, and may oftentimes not have any relationship with each other.

The truth of this question lies, as in so many other things, in the golden mean, and I believe we all must fully subscribe to the opinion as expressed by the eminent neurologist, Binswanger, in his excellent work on hysteria, in which he says in respect to gynecologic diseases and their relationship to hysteroneurasthenia "the opposition against gynecologic operations, performed indiscriminately and without logical reason, for the relief of hysteroneurasthenic symptoms, has been fully justified. On the other hand, however, it is also extremely unreasonable to say that gynecologic diseases and hysteria have never any etiologic relationship with each other. I fully believe that, considering the vast amount of cerebrospinal and sympathetic nerve fibers distributed in the female pelvis, chronic inflammatory and degenerative diseases of the female organs are enabled to produce far-reaching changes in the irritability of the central organs of the nervous system. To this must be added that many gynecologic diseases, such as menorrhagia, chronic endometritis and metritis weaken decidedly the power of resistance of the organism. Furthermore we must not forget that many diseases of the female genital organs have a deleterious influence on the psyche proper of the individual. If we consider without bias the harmful influences of certain diseases of the female genital organs on the psyche of the individual, we cannot fail to find cases in which the disease of the genital sphere was a direct and first impulse for the development of hysteria. Another question is whether these local affections of the genital tract would have been enabled to produce hysteria without a socalled neuropathic constitution being present in the individual. Such a possibility we could not verify by our own observation, as in all our cases there was a decided congenital neuropathic disposition present."

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[1] Reprinted in the Iowa Medical Journal, 1900.

My own opinion expressed in my monograph was that "neurotic disturbances exist very often in a patient without any organic lesion in the abdomen, and hysteric symptoms exist as well in males and children as in females, but when there exist lesions in the genital sphere, it is, I believe, beyond discussion that these are able to serve as 'agents provocateurs de la neurasthenie,' so to speak with Charcot, and are able to accentuate the neurasthenic symptoms in such a manner that they become the most prominent symptoms and obscure the true cause of the illness. Naturally it is not sufficient, in such a patient, to treat one of these conditions without paying any attention to the other, such as to treat neurasthenia without regarding the irritant cause, the abdominal state; treat everything proportionally and in combination and you will find the results fortunate to yourself, as well as, what is most important, beneficial to the patient."

Another much disputed question has been and still is, whether the retrodeviation of the uterus *per se* is the underlying cause of the symptom-complex, of which the patient complains, or whether this has to be attributed to the associating complications within the female pelvis. In other words: Can retroflexion of the uterus *per se* produce symptoms? There is no doubt that when we find an uncomplicated retrodeviation of the uterus in a virgin we will seldom find that the patient complains of symptoms directly attributable to such malposition. In many other cases we will find other pathologic conditions combined with the malposition of the uterus, such as inflammation of the tubes and the ovaries, descent of the ovary and uterus, fixation of the uterus, tubes, and ovaries, associated with inflammation of the uterus and mucous membrance of the uterus, posterior parametritis, elongated cervix, pyosalpinx, etc. It is certainly unquestionable that whenever we have such complications connected with retroversion of the uterus, these must receive the first attention and be treated according to the special indications determined by an exact differential diagnosis either conservatively or operatively or in combination, and when this is accomplished, then arises the question whether or not the retroversion shall be treated. That the retroversion may be an etiologic factor in diseases of the genital sphere, can be seen in those cases in which there is primary retroversion, followed by descent either of the anterior or posterior vaginal wall, or both.

Furthermore, I think everyone will admit, that retroversion may be followed by congestion of the vessels of the broad ligaments and by venous stasis of such a character, that varicosities in the broad ligament and in the rectum, associated sometimes with coprostasis and inflammation of the pelvic organs may result.

In such cases if we simply treat the inflammation of the pelvic organs, the coprostasis and venous stasis, neglecting the retroversion, we will certainly find that the patient improves temporarily, but within six months, more or less, the patient will have a turn (providing she is not under continuous observation) presenting the same symptoms, the descent very often being increased and the venous stasis much worse.

In many cases, in which we found at the first examination only a beginning descent of the anterior wall of the vagina, we later found a complete cystocele, sometimes with elongation of the cervix, and formerly where there was only a slight eversion of the mucous membrane of the posterior vaginal wall, we found a complete rectocele, in other words, retroversion of the uterus is often the real cause of the prolapse and other disturbances in the female pelvis and does not always exist merely as an unimportant condition.

In regard to the pessary treatment for retrodeviations it is hardly necessary again to recite the many inconveniences of such a treatment. When the patient asks us in regard to the definite results of this treatment and the length of time she must wear the pessary, we must answer with Kuestner:[1] "The patient must wear the pessary until the uterus spontaneously regains its normal condition. The time is quite variable; some patients requiring it from childhood to the climacteric, interrupted only by pregnancy and the postpartum state; with others it is sufficient to hold the uterus by a pessary for one or two years, when the normal condition will be established without further aid. In general I have found that both the public and the physician underestimate the length of time required for pessary treatment." Previous to this he says, "one cannot recognize in a patient, who wears a pessary, an individual in full possession of her physical powers, from the standpoint of accident insurance." Furthermore, it is well known that it is very difficult, in some cases, to select an appropriate pessary, and that in cases in which the vagina and cervix are much shortened, it is impossible to apply a pessary at all.

In regard to the methods of operative procedure I would say that I do not believe that one particular method of operation is fitted for every case. I believe we have many methods at our disposal, which, followed by an expert operator, give, although possibly not ideal, still very satisfactory results.

The operations for shortening the round ligaments seem *a priori* the most physiologic operations, but when performed as advised by Alexander Adam, without opening the peritoneum, their realm is very limited. They can only be used in uncomplicated cases, which are, as already pointed out, comparatively rare. Goldspohn attempts to enlarge the Alexander operation, and for the purpose of examining and performing necessary operations on the tubes and ovarias he performs a double inguinal laparotomy. This operation will always be open to the following objection: Why perform two laparotomies when the same work can be done with a much clearer view of the field of operation by one laparotomy in the median line and abdominal shortening of the round ligaments after one of the methods in vogue, as, for instance, Wylie's?

Recently I did a laparotomy for appendicitis on a lady on whom one year previous a shortening of the round ligaments had been done by another surgeon according to the method last mentioned. The uterus was lying in a good position, although a little descended. The family doctor informs me that she is now pregnant.

Against all operations which have for their object the retention of the uterus in place by the formation of artificial bands, such as abdominal and vaginal fixations and suspensions, the objection has been made that it is not in the operator's power materially to influence the quantity and quality of formation of the band. It has been pointed out and proved in some cases, that, during the child-bearing stage such a band could be an impediment to the growth of the uterus and for the birth of the child. However, numerous statistics published by Howard A. Kelly, Noble, Olshausen and others of abdominal suspensions; Duehrssen, Mackenrodt, Ruehl and others of vaginal suspensions, showed that when the operation is performed correctly, such danger does not exist; in other words, that when disturbance during pregnancies and childbirth occur which must be attributed to the fixation or suspension, that the suspension itself is not at fault, but the inexperienced operator.

An objection to *abdominal* fixation [this operation is out of question during the child bearing period of life] and suspension, which cannot be overcome, is that the uterus is fixed in an utterly abnormal position, and that this organ which normally lies in the small pelvis, is dragged into the large pelvis.

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[1] Veit's Handbuch der Gynæcologie, Vol. 1, p. 125.

As I advocated five years ago, the advantages of vaginal suspension, according to a method almost identical with the Ruehl-Mackenrodt method, or following Duehosen's method, are as follows: 1. It fixes the uterus in a normal position within the small pelvis. Furthermore, as the fundus is left free, it allows the uterus mobility within the small pelvis and free growth during future pregnancies. 2. It does not leave an external scar, and therefore, I find that patients consent much more readily to this operation than to the abdominal operation. 3. There is no danger of ileus nor hernia following the operation, as has sometimes followed abdominal fixations and suspensions. 4. As in many cases a curetment has to be done or a laceration of the cervix to be repaired or a cystocele or rectocele to be operated upon, the vaginal fixation, performed at the same time, does not necessitate a change of the field of operation. Even Werth, an ardent advocator of the Alexander operation, recommends in all cases in which the retroflexion is complicated with descent of the vagina, the vaginal fixation after Duehrssen's method, and states that there are no disturbances for future pregnancies to be feared, if performed in the right manner.[1] That operations on the adnexa can be performed at the same time by this route by experienced operators, is a well-established fact. 5. The time of convalescence is shortened. I allow my patients on whom vaginal suspension is performed to leave the bed on the eighth day and to go home on the tenth day after the operation.

I have performed vaginal suspension 127 times, in many cases in connection with other vaginal operations, without a death. Up to date 11 cases of pregnancy following the suspension, in one patient twice, have come to my notice. Of these, one patient aborted in the fourth month; one is pregnant now in the third month, and in the other nine cases childbirth was without any disturbance which could be attributed to the suspension. A brief report of three of these cases follows:

CASE I.—Mrs. C., aged 24, of Chicago, Ill., was transferred to the Post-Graduate hospital by Dr. W., of Milwaukee, who stated she was, married three years and never had any children. A few months following her marriage leukorrhea set in and she experienced at certain times a severe pain in the lower part of her abdomen. An examination by the house doctor revealed a retroflexion of the uterus and fixation by adhesions. An abdominal operation was advised by a Chicago specialist, but she would not give her consent. Her desire was not only to get relief from her pain, but to be relieved of sterility.

Examination revealed a retroflexed uterus with chronic adhesive perimetritis and chronic adnexitis. The uterus was freed from the adhesions, cureted and fixed to the vagina in the manner advocated. The operation was somewhat difficult because of the narrowness of the vagina. Four months later she became pregnant. The childbirth was, according to a statement of her house physician Dr. Wagner, without any disturbance. When the head of the fetus was engaged in the outlet of the pelvis forceps were applied because of secondary weakness of labor pain. Uterus is lying in normal position at the present time.

CASE II.—Mrs. W., aged 34, of Milwaukee, the mother of three children, was transferred to the Post-Graduate hospital by Dr. W. She has complained since her last labor of a bearing-down pain while walking. The examination revealed a retroflexed but movable uterus, cystocele and rectocele. The uterus was fixed to the vagina and an operation for cystocele and rectocele was performed at the same time. Six days after this operation typical gallstone colic set in, for which she was operated upon four days later. After removing several gallstones and instituting drainage of the gallbladder for three weeks she returned home. Since the operation she has been pregnant twice. The childbirth in each instance was without any disturbance whatsoever. Uterus is lying in perfect position according to the statement of the family physician. (Dr. Wagner.)

CASE III.—Mrs. F., of Marquette, Mich., was transferred to the Post-Graduate hospital by Dr. Y.; she is the mother of two children, and complains that for six months she has had menorrhagia and pain in the small pelvis. Examination revealed metritis, endometritis, and the uterus lying in retroflexion, but movable. Curetment and vaginal suspension was done in the usual manner. One-half year later she was pregnant. The child was born at full term before the physician arrived. The placenta, however, was retained, and had to be removed by intrauterine manual ablation. Unfortunately, infection occurred, followed by pyemia, from which the patient recovered after a protracted illness of six months' duration. It is needless to say that the retention of the placenta and the infection had nothing whatsoever to do with the vaginal fixation.

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[1] Zentralblatt für Gynækologie 1905. p. 617.

I perform the operation in the following manner:

A volsella forceps is inserted into the anterior lip of the cervix and the uterus drawn down and cureted. Another forceps is inserted into the mucous membrane of the vagina near the urethral orifice. If necessary, after excision of a small oval of mucous membrane of the anterior vaginal wall in a manner similar to anterior colporrhaphy, a small transverse incision is made over the cervix as high as the anterior vaginal vault. The bladder is freed from the cervix, great care being taken that the muscular structure of the bladder is not injured or the bladder opened (this happened to some operators and to myself once). After thoroughly freeing the bladder, the peritoneal fold appears in the upper part of the wound. This is caught by peritoneal forceps, freed from the bladder and opened in a transverse direction. The uterus is pushed forward by a sound within this organ and by pushing the cervix back, the anterior wall of the uterus is carefully caught by a volsella forceps. Then a needle armed with silkwormgut is introduced through the vagina and peritoneum on one side, and the anterior wall of the uterus, peritoneum and vagina on the other side. This stitch is introduced not higher than 2 cm. above the internal os of the uterus in case of normal length of the uterus. However, if the uterus is enlarged by chronic metritic processes, the stitch could be introduced a little higher. Beneath this silkwormgut stitch, two more stitches of thick catgut are introduced in the same manner. Oftentimes a catgut suture, passing only through the peritoneum, is introduced directly above the first fixation suture. The sutures are tied, the incision into the mucous membrane of the vagina closed by catgut and the vagina packed with iodoform gauze. In case operations on the adnexa have to be performed, the uterus is drawn into the vagina before applying the sutures.

The patient is allowed to go home on the tenth day following the operation when the iodoform gauze is removed and a vaginal douche with lysol given. The silkwormgut is removed after six to eight weeks.

TREATMENT OF PNEUMONIA.

BY

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Our present information shows pneumonia to us as a condition of lung solidification occurring in the course of a number of pathologic developments of most diverse course, and of still more diverse origin. We find this condition of solidification in sequence to injuries produced by cold and by other irritations, as, for example, by the vapor of ammonia. It is caused by the Weichselbaum-Frankel bacillus, the natural host of which appears to be the house mouse, and cases are reported as caused by certain other morbific agencies not clearly defined.

While the pestilent fever so fatal in New York City appears beyond all question to be the bacillary Weichselbaum-Frankel disease, for which no efficient treatment is at present known, and for which a serum is being developed by the use of the rat, an animal relatively immune other diseased life movements, produced by some other causes, and having quite other courses, are found in many cities, among them in Boston and Chicago. In both these cities, during this season (1901–2 and 1902–3) a diseased life method was found which is characterized by the intensity of the vasomotor disturbance. The nervous symptoms of the disease caused by the bacillus, and the fulminant character of the disease caused by cold, are alike wanting.

This diseased movement referred to is specially characterized by disturbances in the blood circulation, and it was from the study of this typical development found in these cases and others like to them, that the so-called "Vasomotor Theory" of pneumonia was evolved by its authors.

Since the term pneumonia (which is properly the name of a symptom only, the exudation of coagulable serum into the lung), has been transferred to the pathologic movement in which this symptom occurs, confusion has the field, and at least six distinct diseased life methods have been classified together, and one name has been applied to every pathologic movement in which the lung is solidified by coagulable lymph, no matter what the cause of the exudation may chance to be. While the following discussion of treatment is to be understood to refer to the vasomotor disease, the true "lung-fever," and to that alone, we are compelled to consider symptoms and treatments without reference to the causation. It is also worth considering that diagnosis among "the pneumonias" is possible, if the one evident symptom, lung-solidification, does not blind the diagnostician's eyes to many others. This is of importance, since the application to the vasomotor disease of the treatment fitted to the injury, strictly local in development, and which is produced by cold, has undoubtedly caused many therapeutic disasters, and fortunate results could hardly be expected if the treatment fitted for the vasomotor disease were applied to the form produced by the pneumococcus.

Be it understood, therefore, that the treatment which follows is affirmed only in respect to the vasomotor disease.

Causation.—In respect to causation, absolutely nothing can be predicated.

Symptoms.—The primary symptom is fever, steadily increasing, the temperature may be remarkably high, 40° C. (104° F.) has been recorded, gradually mounting, yet not rapidly. Disturbances of the pulse-respiration ratio are noted early, but the complete breakdown of the compensation, followed by the exudation, comes on suddenly, and even when the physician is watching for it, the catastrophe seems always to take him by surprise. The relation of the exudation to the rest of the symptoms has not been satisfactorily determined, but it is apparently secondary.

Treatment.—Those who have published descriptions of the cases of this disease process, while admitting the existence of "adynamic cases," insist that the "sthenic" cases vastly predominate. It is also affirmed that the same treatment may be applied to both forms, if pains be taken to sustain the strength of the patients representing the adynamic cases. The reaction of the heart seems to suggest the thesis of Broussais, that "a poison is formed in the intestine and absorbed, which is an irritant to some parts of the blood-circulation-mechanism, while it is equally a sedative to other parts." We are therefore justified in regarding the poison as "multiple and selective," at least so far as our present information goes. This opinion is also justified by certain observations by Bunge, by Meyer and Buchard, all tending to show selective absorption, not only by the variously distinguished histologic forms, but even among the elements of the same form. In fact, this theory of selective nutrition as developed by Bunge and Meyer is at the same time the easiest explanation of the pathologic picture, and the least difficult development of the therapeutic theory. The action of the poison is selective, that is, the poison is absorbed by certain special cells only, exciting in them excessive activity, or else, absorbed by all cells alike, it produces tangible results upon a small group of cells only.

Which ever explanation is accepted, it applies equally to the poison and its antidote, while the fact of the selection cannot be gainsaid, no matter what theoretic explanation of the pathologic phenomena is offered.

Almost immediately after the announcement of the theory that this form of pneumonia was the result of *a definite intestinal indigestion* forming a special poison (DeMills, Horing, Harding, Coit), came the announcement of the mysteriously successful results obtained with small doses of calomel, 1-12 grain hourly; while the antimonial preparations, which popular and orthodox opinion held to be "the perfected treatment for the common form of the North," invariably regarded at that time as now as being produced by cold alone, was seen to have no good effect and frequently a bad one. Calomel was used by others than the famous physician at the Hotel Dieu and even today is the favored treatment in these cases. One who deserves every confidence says that the treatment should in all cases be begun by often repeated small doses of calomel; he uses as the standard dose 1-6 grain given every half-hour, and after the third and fifth doses gives "an ample dose" of a saline cathartic to insure the complete evacuation of the bowels, with repeated doses afterward to keep the bowels empty. This evacuation of the bowels secured, a number of secondary processes have been advised to maintain disinfection. Among these may be mentioned sodium sulfocarbolate "if well accepted by the stomach, because to some persons it acts, even in small doses, as an emetic;" Bouchard's naphthalin-sugar powders and the charcoal-iodoform mixture are also to be recommended. All of these drugs produce satisfactory results for a time and the suggestion to use them in various sequences may be considered as "most excellently wise, and good advice."

The sudden improvement in the condition of the patient, which in some cases, a large minority certainly, follows at once upon the evacuation of the bowels, has possibly given to the physicians referred to a false idea of the causes, but the group which insists that the real cause of the disease is poisoning by products from materials formed in the intestines, and that the vasomotor and lung symptoms depend upon this poisoning (and not the poisoning and the vasomotor disturbance upon the lungs' engorgement), have certainly made out a very good case.

An equally important matter is the control of the circulation, and this is best accomplished by the combined use of aconitin and digitalin. The fact, that neither of these drugs when used alone will accomplish any perceptible fraction of the work they will do when used together, can be demonstrated by any one who happens to encounter one of these cases. The selective action of the ganglion of Bidder was known (Powers) long ago, but was forgotten in the excitement following Koch's discovery, and that the Remarck ganglion should also have a selective action can hardly be called wonderful, yet that this selection should be so well defined is at least unexpectedly fortunate.

Those best able to advise as clinicians, but not as physiologists may be, seem to insist that the action of the digitalin is upon the vascular net of the air cells, but how this can be, as these vessels contain no muscle cells, is hard to understand, nor is the assumption needful, for the nerve net running from the right heart to the small branch of the pulmonary artery supplying each alveolus will account most amply for the control observed; and there is no need to go beyond the known facts, and to make needless hypotheses to explain the observed result.

The results of laboratory study indicate that the combined action of the two alkaloids may be much as follows; that the digitalin causes the contraction of the pulmonary arteries, while the systemic bloodvessels are relaxed by the action of the aconitin. The theory propounded by the advocates of the treatment that the excited heart, acting upon paralysed bloodvessels, causes the congestion of the lung's capillaries and the transudation of the lymph may, or may not, be true; the important point is not the hypothesis on which the treatment is defended theoretically, but the consequences of the treatment practically used in a given case; these being satisfactory, the theory of the treatment is of no consequence, to the clinician, none at all. The reason why, becomes a matter of laboratory study in order that the observed fact may be satisfactorily explained and this question may safely be left to the insatiable curiosity of the laboratory's devoted priests and priestesses.

The intestinal tract emptied and cleansed, and carefully maintained in satisfactory condition, nutrition will not be seriously interfered with. The body therefore can supply the needed strength for the healing process. The demand of this process will be found very great indeed, and many a patient has survived the primary mischief to die from exhaustion, an exhaustion directly in proportion to the extent of the demands of the repair-processes in the lung. There can be no result more disheartening to the physician, who, by watchfulness and wisdom has defeated the foe, than to see his patient dying from the simple lack of the residual strength needed for the process of repair. To avoid this catastrophe, every means of saving the patient's power of recuperation should be made use of; no precaution to prevent the least waste of strength should be omitted.

In the course of recuperation many annoying symptoms appear. One of the most annoying of these is coughing. Much and acute observation is needed here, for expectoration must be encouraged. Useless coughing is a dreadful waste of strength; nerve force and muscular energy are expended and much needed sleep may be prevented, and thus the best means of recuperation interfered with. That useful coughing and the accompanying expectornatio must be encouraged, and useless coughing be checked, is a proposition about which there can be but one opinion; how the desired end is to be gained is as hotly disputed as any point in modern practice. The expectorants producing nausea are of course not to be thought of; they are positively dangerous as well as useless.

Ammonium chlorid and the mixtures of the bromids have been found of the utmost use, their action being to render the mucoid discharge less tenacious, and to allay the irritation of the terminal nerves. The hypobromochlorite of lime is also very useful, as the available amount of bromin and chlorin is large in proportion to the dose. It is also a very powerful oxydizing agent, and the chlorin and bromin being excreted in gaseous state effectually disinfect the air passages. The tendency to form water combinations, resulting in acid activities in the lungs causes them at times to act as irritants; this indicated use, therefore, demands caution on the physician's part, and in cases in which these lime salts cannot be used, the sal ammoniac will be useful as being in effect decomposed and excreted as chlorin by the lungs, in some measure the larger part of the chlorin and the basic gas NH_3 (coming out as $(NH_4)_2CO_3$) in the urine only. We, therefore, can make a choice, and if the residually alkaline reaction of the sal ammoniac proves irritant, the acid reaction of the lime salt may be tried; one or the other should meet the need. Ammonium bromid used with sal ammoniac will allay useless coughing while it in no way hinders expectoration, and the same is true of the lime salt.

It must never be forgotten in treating the cough of pneumonia that the symptom may be caused by almost any irritation of the terminal filaments of the pneumogastric nerve. The name of these filaments is legion, and since the nerve circuit has other motor branches than the phrenic nerve, including the accessory, most complicated motor impulses are from time to time made manifest; this possible origin must be remembered, as otherwise the cause of the cough may remain a mystery. Symptoms of heart complications may be caused in this way without any corresponding lesion, or a heart may become "wildly hysteric" from some trifling sore spot in some obscure bronchus. More than one death from "heart failure" in the course of pneumonia might be rightly set down as "hysteric spasm of the heart" due to some unnoticed, and possibly invisible irritation in the lung. So important is this interdependence of heart and lungs that the physician should be unfailingly on the watch, ready to note the least suspicious item, and prepared to make rigid investigation of every symptom, limiting his curiosity and industry by the endurance of his patient, whose strength he must not tax, whose energy he must not waste.

From time to time cases will demand attention to other of their symptoms, for instance, sleeplessness, and it is a most singular circumstance that in no illness is vigilation of worse prognosis. Nearly every hypnotic known appears to have some advocate, and curiously opiates on which the energetic vituperation of a number of physicians has been expended found many advocates two score years ago. To-day, the opinion of one highly skilled and influential group inclines to hyoscin and hyoscyamin, and experience seems to justify their praise. Others urge the use of sulfonal, others again, trional, but the men of greatest reputation say hyoscin and hyoscyamin. In my opinion hyoscin acts to the best advantage, but a wellknown London practitioner says: "In at least 15 cases I made use of hyoscin, only to abandon it for the sister product hyoscyamin," and he believes as I do, that when the administration by the hypodermic syringe is *possible*, no other method is even to be considered.

It may be urged that his whole scheme of treatment and the pathologic conception on which it rests is ultimately a deduction from the hypothesis of vasomotor disturbance. So far as *the pneumonia* is concerned this is true, but the pneumonia is accidental, using this word accidental in the proper sense, and is in no way essential. This very important circumstance is not infrequently forgotten. In an *essential pneumonia*, such as that from cold, or a primary one following upon an intense local irritation, the exudation is "the whole thing" and every symptom takes its origin in the exudation; if this were removed, there would be no illness. The exudation is the one essential entity, about which are grouped, as secondary and dependent circumstances, all the other conditions of disease. In the secondaryor *symptomatic pneumonias*, as that in the fever now under discussion a very unlike condition exists. The disease begins in symptoms of another order, usually in organs distinctly belonging to another and unlike group, and we realize that "the man would be just as sick if the lung symptoms were omitted." No matter how much the importance of the symptoms due to the lung complications may be exploited, our knowledge of the facts is always able to remind us that the digestive organs were much disturbed before the symptoms referred to the heart began, and the heart symptoms will have caused anxiety for many hours, maybe even for days before the respiratory symptoms appeared; to clear up the diagnosis for those who regard the "diagnosis" of pneumonia as explanation. One might as well regard "paralysis" as the injury suffered instead of as a symptom of central injury endured.

The pneumonia diagnosis will be made if the lung is solid and it will be accepted as an explanation of the most intricate pathologic puzzles by too many, even physicians. The physician can say, "he has pneumonia," but this saying does not explain anything, in fact it but increases the dread and dismal density of the darkness. As long ago as 1880, Bouchard laid the very uttermost of stress upon the sequence of symptoms in this condition. Not content with simply making the statement, he repeats it, and that not once, but many times: "Before the appearance of the striking symptoms due to solidification of the lungs, which even a blind man sees instantly, the observing physician has seen many other far more important and most puzzling symptoms." The symptom which specially impressed this physician was a chemical one, naturally, since Bouchard was a chemist first and a physician afterward; this symptom is the disappearance of the chlorin, normally found as sodium chlorid or potassium chlorid in the urine. Bouchard found that the chlorin excreted by way of the urine begins to diminish even before the fever attracts attention, and so satisfied was he, and so satisfied were his friends, that the disappearance of this substance was "essential" *and not a symptom*, that they initiated the "sal ammonic treatment," of which this idea is the fundamental postulate, and they erected this treatment theory on this postulate alone. In one of his lectures, a clinician of this same coterie said: "The first symptom to attract attention is the fever, which may already be surprisingly high, the urine examined in due course will show the chlorin excreted to be so reduced as to make this reduction a matter of the first importance. If the physician is wise, he will appreciate the gravity of such an illness. The diminution of the chlorids may be progressive until they disappear entirely, and as these chlorids decrease in quantity the danger of the solidification of the lungs is hourly increasing *pari passu*" (at the same rate). Later in the same lecture, he said: "It seems to me quite certain that the condition of pneumonia is something secondary, accidental indeed, for, notwithstanding the name pneumonia, this diseased action of the heart has nothing to do with the lungs. It has not caused the disease of the lungs, it is not in any way caused by it, both are but the results of some cause as yet not known (*inconnu*)."

Such was the condition when the lecture quoted was delivered, some 30 years ago. Is it very much otherwise today? The pneumonia caused by cold is sharply parted from the disease caused by the pneumococcus, but these two, the inflammation due to cold and the septic infection by the coccus, are not more distinct from each other in every respect, except the existence in the lung cells of a fibrinous exudation, than are both of them from this pathologic movement characterized by vasomotor disorders first, and exudation later on. That the name of a symptom should be equally applied to all three clinical developments shows the inertia of the medical mind, its devotion to precedent is the simple explanation; but is not the adherence to usage being carried too far, do we not need a new name or two of them, are we not justified in coining such? Shall we seek to reestablish the use of the name "Lung-fever," which had been the English name of this disease for two centuries before the name pneumonia was used in this relation; and seek new names for the other two diseases?

In any event, let us insist on the distinctions between this disease and the two with which, by reason of the name maybe, it is so regularly confounded, and avoiding the theoretic, but fashionable nihilism, use the means of treatment which modern chemistry has placed at our command, and ignoring the question of the method of cure be contented with the fact that our patients treated according to experience (not theory) usually recover.

CLINICAL NOTES.

RUPTURE OF THE ESOPHAGUS INTO THE PLEURAL CAVITY.

BY

THOMAS H. POTTER, M.D.,

of Detroit, Mich.

The following case seems of sufficient interest to be published.

P. G., an Irishman, aged 44 and unmarried, was admitted to the Jersey City Hospital, December 7, 1903. Occupation, laborer. His physical condition was apparently good, he was of large physical and muscular development. No venereal history was obtained, he was a moderate smoker and admitted the continuous use of whisky and beer for a number of years; stated he had never been sick in his life, nor did he give any history of recent injury to chest.

The history of the present attack was as follows: After partaking of a liberal amount of whisky, beer and free lunch, he was suddenly attacked with a sharp pain in the precardial area, followed by extreme physical weakness, and accompanied by unquenchable thirst in consequence of which he partook of water in large quantites. On admission he was unable to stand alone and showed extreme weakness due to shock. The pulse was 112, very weak and irregular; temperature 98.5°; respirations 28. He was cyanotic, skin was cold and clammy, respirations shallow and irregular.

On inspection the left side seemed increased in size, with a bulging of the intercostal spaces, also an absence of motion. On the right side the respiratory movement was decreased in force but increased in frequency, the breathing being abdominal in character.

Upon palpation the left side of the chest showed an entire absence of vocal fremitus. On the right side at the upper part, vocal fremitus seemed slightly exaggerated, while in the lower part it seemed somewhat diminished. The apex beat could not be felt.

On percussion of the left side both anteriorly and posteriorly the note was found to be flat in character. On the right side up to about the fifth rib the note was dull, above this slightly tympanitic.

Upon auscultation on the left side there was an absence of breath sounds with the exception of the upper posterior part where the breathing was amphoric in character. On the right side in the lower part the breathing was very weak while in the upper part it was bronchial in character. The heart sounds were scarcely preceptible.

Examination of the abdomen showed the liver dulness to extend two fingers' breadth below the free border of the ribs, otherwise it was normal.

After admission the man's condition rapidly grew worse, and about three hours later subcutaneous emphysema was first noted at the root of the neck. This rapidly spread until it involved the whole chest, and the upper extremities so far as the elbows, and extending up the neck to the face and involving the scalp. The eyelids became so swollen that they could not be separated. The skin over the anterior part of the chest was elevated about four inches, and the usual crackling sensation of subcutaneous emphysema was noted.

The patient's condition grew steadily worse, cyanosis became more marked. Pulse increased in rate to 120 when it was no longer perceptible at wrist. Temperature rose to 100.2° F., but respiration remained at 28. Eleven hours after the onset, the patient died.

Autopsy.—Dr. Arthur P. Hasking, Jersey

City, N. J., performed the autopsy. Upon making the incision through the skin and emphysematous tissue it was found that the air escaped only under considerable pressure.

The left lung was collapsed and the left pleural cavity was filled with a dark fluid and particles of undigested food, and the odor of beer was detected. The right pleural cavity contained a dark bloody serum, the pleura of the right lung showed adhesions, and in general, a condition of preexisting pleurisy. There was a slight effusion into the pericardial sac. The heart, although normal in size, had a heavy deposit of fat. The valves of the heart were normal.

No fluid was found in the abdominal cavity.

The liver was enlarged and showed evidence of cirrhosis but all the other organs of the abdominal cavity were normal.

The duodenum, stomach, and esophagus were removed and opened. The duodenum was found to be normal, while the mucous membrane of the stomach gave evidence of having been congested and was slightly thickened. There was found on the anterior surface of the stomach about 5 cm. from the cardiac orifice an irregular ulcer 4½ cm. by 6 cm.

Examination of the esophagus showed a rupture which was oval in shape and measured 3 cm. in length, the edges of which were sharp, beveled at the expense of the inner coat, and necrotic. The long axis of the rupture being in the long axis of the esophagus, the lower part of which was about 7½ cm. above the esophageal opening of the diaphragm, and was to the left and posterior part of the esophagus. Exactly opposite the upper point of the rupture was a small ulcer about 5 mm. in diameter.

In the lower part of the esophagus about 1 cm. above the cardiac orifice of the stomach were found two small ulcers, one about 4 mm. and the other about 6 mm. in diameter, both being situated on the anterior wall.

The esophagus showed no evidence of stricture, no diverticulum, and the conclusions drawn were that the cold beer caused a spasmodic contraction of the esophagus with rupture into the pleural cavity through the already thinned wall due to the presence of the ulcer. The cause of death was due to shock.

A Wise French Regulation.—By a Paris police order laundries must disinfect all garments as soon as they are received. Clothes must by conveyed to the laundries in hermetically sealed bags, and on their arrival be scalded in an antiseptic solution.

SARCOMA OF THE CHOROID.

BY

B. M. HOWLEY, M. D.,

of New York.

Sarcoma of the choroid is not considered a rare disease, but it is not so frequent as sarcoma in other parts of the body. Noyes says that tumor of the choroid occurs about once in 1,500 eye cases and that the most frequent are the sarcomas. The symptoms vary as this tumor progresses in growth, or as it varies in its point of growth in the eyes. Growths beginning at the macula will cause early blindness while in other cases blindness will not be noticeable until a later stage. In the first stage, pain is not a symptom, but, later, with increased tension, pain becomes prominent.

Some tumors are very slow in growth and are known to have remained about the same size for years, but the average tumor steadily increases in size. The growth of a tumor of the choroid is marked by four stages. In the first stage, the tumor can be only detected with the opthalmoscope. A confirmatory diagnosis can be made with the Sachs lamp. The diagnosis is very important, as an early enucleation may prevent further trouble. In the second stage there is an increase in tension and pain, and it simulates an inflammatory glaucoma. The third stage begins when the tumor breaks through the walls of the eyeball and begins to invade the surrounding tissues. Pain and tension abate as a rule. Exophthalmus is generally present. In the fourth or final stage, metastatic growths appear in different parts of the body.

As soon as a diagnosis is made, it is advisable to enucleate, since allowing the eye to remain increases the chances of metastasis. Metastatic growths may appear even after an early enucleation, but this is not so liable to occur.

The following is the clinical report of a case that came under my observation.

W. G., aged 40, was referred to me at the Manhattan Eye and Ear Hospital about May 15, 1905. He stated that his previous health was good, never had any sickness and denied ever having had any syphilitic trouble. He complained of inability to see well for near work.

Examination of his eyes showed that vision was normal in both eyes but he accepted a +.50 over both eyes and read No. 1 Jaeger with comfort. Opthalmoscopic examination of both eyes did not show any pathologic condition. The field of vision was not taken at this visit. The latter part of December he called to see me and informed me that he was losing the sight in the right eye. Vision in the right eye was 1-200 then and 20-20 in the left. The pupil was dilated with a 4 percent solution of cocain, and examination with the ophthalmoscope showed a mass on the temporal side running from behind the lens in a posterior direction.

With the aid of Sach's lamp, the outlines of the tumor were easily seen when the eyeball was illuminated. Changes had not taken place in the vitreous to any great extent as the blood-vessels of the fundus could be easily discerned.

A diagnosis of malignant growth, probably sarcoma, was made. A few days later the eye was enucleated.

The following is the report of the pathologist, Dr. E. S. Thomson:

Sections show a large mushroom shaped growth about 8 mm. in diameter, springing from the equatorial region of the choroid about the median line to the temporal side. The tumor is composed mainly of spindle cells and has entirely replaced the choroidal tissue. It is lightly pigmented and moderately vascular.

There is no evidence of extension but the optic nerve has numerous atrophic areas in fiber bundles.

Diagnosis: Leukosarcoma of choroid.

AN UNUSUAL CASE OF TIC.

BY

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of Philadelphia.

Associate in Nervous and Mental Diseases, Jefferson Medical College; Examiner of the Insane, Philadelphia General Hospital, etc.

The manifestations of functional nervous diseases are so various that one is sometimes amazed in their presence and at sea when an explanation is sought for. Hysteria, with its innumerable physical and mental phenomena, is an example. There is another curious neurosis, called tic, in which the chief symptom is a motor phenomenon. *A priori* one may think that the disease is the result of a disturbance only of the motor apparatus, but a close study shows that the symptom is only a secondary manifestation of an affection which has a psychic basis. Brissaud, Meige, and Feindel pointed out the mental peculiarities in patients suffering from tic. To put in Magnan's words: "The disturbed motor equilibrium corresponds to a disturbed psychic equilibrium."

The following case is interesting and an example of association of one functional disease with another, as an illustration of the role of psychic influence upon cessation or recurrence of a functional symptom and as an example of a very unusual localization of a motor phenomenon.

A young man of 20 was brought to me by Dr. Bonney for an opinion upon peculiar forward movements of his trunk. Examination showed that the movements consisted of abrupt, spasmodic and repeated bending forward of the upper half of the body over the lower. In order to determine what group or groups of muscles were involved, the patient was undressed. During each movement retraction of the abdomen was noticed. A hand placed on the latter showed distinctly that the contraction was limited to both recti muscles, which, during each movement became extremely rigid. The tic was therefore exclusively abdominal and in the domain of the recti muscles. No other portion of the body was involved. When the patient was engaged in a rapidly carried on conversation, the spasmodic movements would become less pronounced or not as frequent or even cease entirely. The same results would be obtained, when deep pressure was exercised over the groins or lower part of the spine. As soon as the conversation was discontinued, the movements would recur. During the 30 minutes spent in observation of the patient, he had several attacks and they ceased completely when he left me.

The tic appeared about a year ago, while calling on a young lady (significant factor as to the psychic influence), and continued with more or less prolonged intervals. The patient presented a great number of hysteric stigmata.

The treatment suggested to his physician was chiefly psychic. Motor reeducation in such cases is very important. It consists either of observing absolute immobility during the attacks, or of executing slow and regular movements of the affected muscles in the intervals between the attacks. The psychic element of the treatment aims to exercise the patient's will by repeated and persistent suggestions. Good results are reported from such procedures.

Gift to Baltimore Hospital.—The Widow of Dr. Samuel Leon Frank, of Baltimore, will give $75,000 to the Hebrew Hospital and Asylum of that city to be used in erecting a new hospital building adjoining the present building. Mrs. Frank is a sister of Senator Rayner.

OCULAR SYMPTOMS IN TABES DORSALIS.

BY
EDWARD J. BERNSTEIN, M. D.,
of Kalamazoo, Mich.

In a recent number of the British *Lancet* there appeared a description of three somewhat unusual ocular types of tabes and as the following cases present something of a similar nature, it seems they are not without interest.

Case I.—This is a case of slowly progressive tabes in a young woman, the chief point of interest being the early age of onset and so far as human powers can discern, no syphilitic taint.

Mrs. M. was sent to me by her family physician, Dr. Scott, of Kalamazoo, on account of her intense attacks of occipital cephalalgia and of blindness which came on at varying intervals, lasting from one day to three or four.

She is at present aged but 28, and the disease started at the age of 18. She is the mother of a healthy boy of 7, has had no miscarriages, no history of sore throat, eruption, enlarged glands or stigmata of syphilis, hereditary or acquired, notwithstanding the most careful search. She complains of almost constant frontal headache and deep pain in both eyes, but while these are quite severe they are of less concern than the occasional attacks of occipital cephalalgia and loss of sight. These latter occur late in the afternoon and increase in severity till 4 a. m. when they are at their worst. She never has had pain anywhere else except some discomfort at the menstrual epoch. Vision of the R. E. 20–20; L. E. 20–100; esophoria 2°; no hypophoria; abduction 4; adduction 18–20. Under homatropin dilation R. E. shows plus 2.5, L. E. plus 1.5; Sph. gives 20–15 R., no glass helps the left eye.

The ophthalmoscope shows almost complete atrophy of the left optic nerve, especially the nasal part of the disc, arteries are shrunken and only a small blood current can be made out on pressure. Right nerve is almost as white and the vessels are somewhat shrunken.

The fields of each eye (which are appended) taken with an eight mm. square, show characteristic sector defects, and irregularly concentrically contracted fields.

Romberg's symptom is positive, Argyll-Robinson pupillary reaction is present. The patient can walk and turn rapidly with ease, no ataxic gait (as yet), patellar reflex is absolutely abolished, as too, ankle clonus; she has numerous areas of anesthesia to pin point over both legs and arms. No sexual changes. As she comes out of the "spells of blindness" it is always the nasal side of the fundus which first is restored so that for a time she has bitemporal hemianopsia. This is no sinus complication. I am reasonably sure of that.

Nitroglycerin tablets 0.6 mg. (1-100 gr.) three times daily, with deep massage of the eyes and subconjunctival injections of mercuric cyanid 1–3000, seem to give some relief of pains in the head. In the five months I have been treating her, she has had one attack and that within the past few weeks, and this was the severest attack she has ever had, but she has come out fairly well. I may say that we have pretty well eliminated all elements of possible autointoxication by free saline evacuants. The diagnosis of tabes is made from the fundal findings, the characteristic defects in the field of vision, loss of patellar reflex, positive Romberg and Argyll-Robinson pupil and the peculiar cephalalgia.

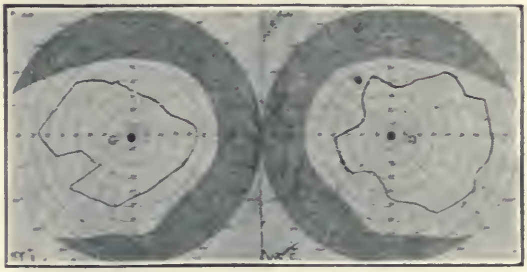
Fig. 1. Fig. 2.

We tried aluminum chlorid on this patient as recommended by Gowers lately, but it seemed to intensify the symptoms.

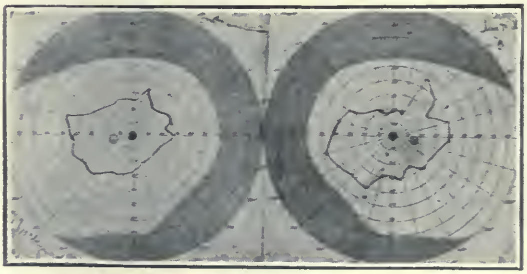
Fig. 3. Fig. 4.

Case II.—Mrs. C. A. W., aged 38, was also sent to me by Dr. W. H. Scott on account of bad vision and headaches. She never had any children but she has had syphillis which was contracted from her husband. Both had been under the doctor's care for this disease and there was no doubt as to diagnosis.

She complains of great dizziness and pain in the head, more especially in the frontal region, through the ears and in the occiput. Attacks of cephalalgia used to be more severe than they now are; lying down gives her comfort, but the moment she attempts to rise headache, diplopia, and nausea ensue. Walking is exceedingly difficult which she thinks is due to the diplopia. This diplopia came on in May, I saw her in September.

She has full normal vision in each eye notwithstanding a double papillitis. Refraction each under mydriatic is 2D sph with 0.5 astigmatism with the rule in the right eye. She has right hypertropia 5½ and esotropia 10. It is impossible to turn the right eye fully toward the inner caruncle or downwards so far as the other eye. Diplopia is manifest at 10 cm.; double papillitis. Knee-jerks are absolutely abolished. Romberg symptom is positive. Anesthesia is present over much of the lower trunk. She has a distinctly ataxic gait and almost topples over when she attempts to turn rapidly. Both fields are strikingly contracted and present characteristic sector defects. She has also laryngeal ataxic symptoms.

Under mercurial inunctions and subconjunctival injections her diplopia gradually has disappeared and to some extent the headaches also. The pains in her limbs and the ataxic gait persist, so also the sector defects in the fields, but the papillitis has cleared up.

These cases are not without special interest, as they both occurred in women and because in the one case of the early onset (before marriage at the age of 18) and the almost positive nonsyphilitic history, and that she is still in the preataxic state. The other case because of the positive proof of specific history, the diplopia and rather unusual appearance of double papillitis rather than descending optic atrophy which is the common eye symptom. I also present them to emphasize the wellknown fact that as the oculist may be the first to diagnosticate nephritis so may he the first to determine tabes.

Since the above was written I have given her big doses of potassium iodid with excellent results as to cephalgia, though tabes is still the diagnosis; it seems clear now that there is some relation to lues. It again shows how often we are fooled in this matter.

SPECIAL ARTICLES.

REASONS WHY PHYSICIANS SHOULD SUPPORT THE PHARMACOPEIA.

BY

F. E. STEWART, M. D., Ph. G.,
of East Orange, N. J.

In ancient times medicine was practised by the priests, who ministered to both the souls and bodies of their charges, dispensing religious consolation or drugs, or both, as the exigencies of the case demanded. At that time medicine, surgery and pharmacy were practised by the same individual. In the year 1215 this seems to have been the case in England, although the apothecary existed separately, and dispensed his herbs and ointments to a wondering and credulous public. In the year 1215 the priests were forbidden by the church to practise any surgery which involved blood-shedding, on the principle that the church abhors blood; and about one hundred years later all surgery was forbidden them. Thus began the division of the medical profession between medicine and surgery, which has lasted until the present day.

But the physician-priest still continued to prepare and dispense his own medicines, so that therapy and pharmacy were practised by the same individual. In the meantime chemistry as a science had made strides, and as the nature of medicines from a chemical standpoint began to be appreciated, pharmacy became more and more complex and was finally relegated to the apothecaries. However, it was not until the sixteenth century, in the reign of James I, that the apothecaries separated from the Guild of Grocers and received a charter of their own. The vocation of the apothecary received another benefit by the founding of the Society of Apothecaries during the same reign. Membership to this society required seven years' apprenticeship, and, under its beneficent influence the vocation of the apothecary continued to grow in value and importance.

In 1666 the Great Plague devastated England. Many of the physicians stood nobly at their posts, many others fled in terror. Then the apothecaries distinguished themselves for their courage and humanity by responding to the urgent calls of the sick and went out of their shops to prescribe for them. In 1703 a legal decision in England suddenly exalted the apothecaries to still greater prominence. They were given the right to prescribe, though no right to charge professional fees, relying on the sale of their medicines for profit.

When the monks ceased to practise surgery, the barbers, who had acted as their assistants, gradually stepped into their shoes, and a class of barber-surgeons, mostly ignorant in the extreme, arose, and practised alongside of the surgeons proper. In the fourteenth century this state of affairs existed; but in the sixteenth century, medicine being largely in the hands of the ecclesiastics, Linacre, a celebrated divine and physician to Henry VIII, founded, in England, the present College of Physicians, which, together with Oxford and Cambridge Universities, where medical schools had been established, received authority over all three branches of medical practice.

A very significant point may be noticed here, and that is, whereas physicians were qualified for their degree by study at universities, surgeons and apothecaries obtained their qualifications by apprenticeship, so that the surgeon and the apothecary were placed in the same social rank as tradesmen or members of other crafts, while physicians had the higher social standing of the learned professions. The surgeons were not allowed to prescribe medicines to be taken internally, and did not regain their right to do so until early in the nineteenth century. It is also significant to note that surgery obtained its present high standing, not by separating itself from medicine, but by assimilating with medical practice and becoming part of it.

In 1745 the surgeons emancipated themselves from the barber-surgeons, with whom they had amalgamated in 1540, and now formed the College of Surgeons. Gradually the practice of surgery became more scientific as learning advanced until it has finally arrived at its present high development. How has this been accomplished? One reason is because the practice of surgery became a profitable business, and thus attracted some of the best brains in the country. That does not mean that the practitioners of surgery are venal. On the contrary the surgeons who have made the most money out of its practice have generally been distinguished for beneficence and professional liberality. I therefore claim that the commercial feature of surgery has done much for the development of surgery both as a science and an art.

We have now arrived to the place in our history where it is well to stop and consider for a moment the lessons that may be learned from that history. Pharmacy was separated from medicine and relegated to the apothecaries. But in spite of the splendid record made by the apothecaries as citizens, in spite of the high-class service frequently rendered the community as instanced by the acts of the apothecaries during the Great Plague, in spite of the license given the apothecaries to practise drug-therapeutics—the vocation was never recognized as one of the learned professions like theology, law, and medicine. Surgery was relegated to the barbers, and, at one time was lower in the social scale than pharmacy has ever been. Yet today, by associating itself again with medicine, it has been raised to a position of dignity and importance as a branch of medical science and practice. The moral is obvious. Pharmacy to attain its true position must also return to its place as a part of medical science and practice.

Now let us turn to the history of medicine in the United States and see what we can learn of its evolution in our own country.

When John Morgan, who was to play such an important part in the development of pharmacologic science and practice in the United States, was born in Philadelphia, in the year 1735, American physicians were in the habit of dispensing their own medicines, which were prepared for them by their apprentices.

This Morgan was an apprentice of Dr. John Rebman, of Philadelphia. His father, Evan Morgan, was an intimate friend of Benjamin Franklin. Rebman, being one of the physicians of the Pennsylvania Hospital, and one of the founders, secured, by his influence, the position of apothecary to that institution for his pupil. Morgan afterward graduated at the College of Philadelphia, then went abroad to perfect his medical education, receiving his M.D. from the University of Edinburgh in 1763. In Europe he conceived the idea of starting a medical school on his return to America, and teaching the European idea of separating pharmacy from the practice of medicine. In 1765 he founded the medical department of the College of Philadelphia, and was appointed professor of theory and practice, the first chair of medicine in a regularly incorporated college in America.

One of Morgan's first acts as a teacher was to advocate the separation of pharmacy from medicine, which plan he ably defended at the succeeding commencement, May 30–31, of the same year. Morgan's plan did not meet with the approval of his contemporaries, and it was not until 1774 that he had even a single follower. Finally, Chovet, and afterwards Jones, took up the plan of writing prescriptions and sending them to the apothecary for compounding, and, in time, the practice was quite generally adopted in our large cities, though not in country districts. Morgan was founder of the Philadelphia Medical Society, and one of the founders of the College of Physicians, and a prominent physician in Philadelphia for many years.

Dr. Morgan was the first lecturer on pharmacy in the United States, and his work was the inspiration of the founders of the Philadelphia College of Pharmacy organized 1821, chartered 1822. The founders of this institution were imbued with the idea of creating a profession of pharmacy in this country to carry on the vocation of the apothecary as a profession in contradistinction to a commercial business. Pharmacists, as the apothecaries were now to be called, were taught to donate their discoveries to the common fund of knowledge, and the vocation was to be cooperative and fraternal, the same as the practice of medicine.

Four years previous to the founding of the Philadelphia College of Pharmacy, Dr. Lyman Spaulding, of New York, submitted to the Medical Society of the County of New York a project for the formation of a national Pharmacopeia. The first edition of that work was published by a committee appointed for the purpose by the general convention which assembled at Washington in 1820. Because of an unfortunate misunderstanding two Pharmacopeias were published in 1830. Twenty delegates attended the general convention in Washington, in 1840. The revision of 1850 was the first to recognize the process of displacement or percolation for the extraction of medicinal plants. Thirty delegates were present at the convention of 1860, and 60 at the convention of 1870. The next convention assembled on May 5, 1880, at Washington (the usual place of meeting) and included 109 delegates accredited from 10 medical societies, 23 medical colleges, 11 pharmaceutical colleges, and the medical departments of the Army, the Navy, and the Marine-Hospital Service. Seventy-five delegates attended the meeting. Numerous and important changes were made in the Pharmacopeia, and a committee of 25 members was appointed to revise the work in accordance with the rules adopted by the convention. There were 175 delegates present at the convention of 1890. Dr. H. C. Wood, of Philadelphia, was elected president. Through the efforts of the manufacturing interests, assay processes for certain galenical preparations were introduced after a controversial war between those representing the manufacturing houses and those representing the retail druggists. This standardization of galenicals was greatly extended in the Pharmacopeia of 1900, and now embraces the fluid extracts, extracts, and some of the tinctures of the more potent drugs.

It was felt by many of those having the interests of pharmacy at heart that in deciding this question of admitting standardized galenicals into the Pharmacopeia they had come to the parting of the ways. Their ideal of pharmacy was a profession of pharmacy consisting of a body of retail druggists or apothecaries educated to prepare and dispense the galenical preparations of the Pharmacopeia. To them the admission of standardized galenicals into the Pharmacopeia meant the raising of requirements above the heads of the retail druggists, and the relinquishment of the manufacturing of galenicals to the great manufacturing houses. And they were honest in their opinion that this would be a serious blow to their ideal. On the other hand, those who advocated standardization believed that uniformity in medicine is of primary importance to the medical profession and the public, and that the cause of pharmacy and of the colleges of pharmacy would not suffer in the long run by any move calculated to promote accuracy in drug-therapeutics.

The convention of 1900 met in Washington, May 2. "Sixty-two medical bodies and 54 incorporated pharmaceutical organizations sent delegates to the convention, so that it may be said to have been thoroughly representative. As this convention greatly extended the scope of standardization, those who led the forces of standoardization at the previous convention were fully vindicated. The convention selected from those present 26 members, consisting of 21 pharmacists, chemists and botanists (seven of which number held medical degrees) and five physicians, who were designated the Committee of Revision of the Pharmacopeia of the United States of America. Nearly one thousand (958) substances, embracing crude drugs and preparations, have been deemed of sufficient importance to merit a place in the United States Pharmacopeia."

The three branches of medical practice as carried on in this country are gradually undergoing a process of evolution. We have the physician practising therapeutics and surgery, and the practice of pharmacy shared between the apothecaries and the great manufacturing chemical and pharmaceutical houses. The dispensing of medicine, relegated to the apothecaries on account of its complexity, is gradually being resumed by the medical profession because of its growing simplicity. As a result the prescription business, which once constituted an important and profitable part of the vocation of the apothecary has greatly diminished, and the manufacturing business has been largely absorbed by the great manufacturing houses. This, in turn, has forced the apothecaries to adopt many side lines for the purpose of making a living.

It therefore becomes necessary for the medical profession to consider the methods of the manufacturing houses to see whether they are serving the cause of pharmacologic science and practice in a proper manner.

As the tendency of physicians is to regard pharmacal practice with indifferennce, it is necessary in this study to consider what responsibilities rest upon the medical profession in regard to the practice of pharmacy and the maintenance of the Pharmacopeia.

History shows us that pharmacy is naturally part of medical science and practice, and the medical profession is responsible for pharmacy, both from a scientific and practical standpoint. By regulating the practice of pharmacy to the apothecaries, the medical profession has not escaped that responsibility. The medical profession is a privileged class of the community, responsible to the State for the advancement of medical practice, including pharmacy, and the maintenance of a Pharmacopeia. Thus far, with the exception of a devoted few, the medical profession has taken very little interest either in pharmacy or in the Pharmacopeia. It is time for a change of policy on the part of the profession in this regard. Without a Pharmacopeia, progress in drug-therapeutics is impossible. Common standards for determining the indentity, purity and strength of medicines is necessary to maintain uniformity in medicines. Physicians in accepting their license to practise from the State, accept with such license the obligation to render certain professional services to the State. Part of this service consists in the maintenance of the Pharmacopeia with all the work that this obligation entails.

I am in perfect harmony with those who teach that pharmacy should be practised as a profession, and believe with them that much of the work necessary to revising the Pharmacopeia should be entrusted to the pharmacists. But I am not in harmony with the idea that pharmacy should be conducted as a separate profession. There can be no separate profession of pharmacy. Pharmacy is dependant upon drug-therapeutics, and the pharmacist is not educated as a physician or licensed to practise medicine. Drugs are poisons, powerful in their influence for good or evil. They cannot be properly applied to the treatment of the sick without a knowledge of diagnosis, and the apothecaries are not versed in this branch of medicine. Neither is the ideal of pharmacy as a commercial business carried on to supply the people with medicines for self-medication correct in principle. What do the people know about diagnosis, or the proper use of medicines? I fully recognize that there is a field for domestic medicine, but that field is very restricted, and it is important that domestic medicine be practised in conjunction with the family physician, and under his guidance and instruction.

I am not in favor of restrictive legislation forcing people to go to the doctor. The people should be left free to treat their own disease if they so desired. But I am in favor of a campaign of enlightenment on this subject for the purpose of teaching the people that the treatment of disease without diagnosis is supreme folly.

The history of the development of the Pharmacopeia clearly shows that the future of pharmacy, and of the Pharmacopeia itself, is, in great measure dependent upon the manufacturing houses. Pharmacy is the science of preparing medicines, and is dependent upon a complete knowledge of disease and its treatment, even to the extent of embracing a knowledge of surgery so far as drugs are used in surgical practice. In other words, pharmacy is dependent upon a knowledge of drugs from every possible point of view. This knowledge, when reduced to law and embodied in system, includes knowledge of botany, mineralogy, chemistry, zoology, physiology, geology, microscopy,etc., also a knowledge of pharmacodynamics and drug-therapeutics, including clinical medicine. No individual physician or apothecary has time to perfect himself in all of these branches, or opportunity to put all of this knowledge into practical application. The manufacturing houses, by employing experts in all the departments of pharmacologic knowledge, and publishing the results of their observations, can do much for medical science.

The extent to which this knowledge comes into practical use in this connection becomes at once apparent when the question of introducing new medicinal drugs and chemicals to science is considered. Such introduction requires the cooperate investigation of experts in all of the departments of science just mentioned. My attention was called to this fact in personal experience in connection with the introduction of new materia medica products. After graduation in pharmacy and medicine my first contribution to the materia medica was the introduction of desiccated bullocks' blood. This brought me into contact with a manufacturing house engaged in the introduction of new materia medica products to commerce, and resulted in my devoting a lifetime to this important subject.

Realizing at once the necessity of securing cooperation between experts in all lines of research pertaining to the use of materia medica and food products in their investigation as therapeutic agents, I first conceived (1881) the idea of establishing a national laboratory at Washington in this regard, and organized a national society of experts to cooperate with it. This plan met the hearty approval of the Smithsonian Institution, and the Surgeons'-General of the Army, Navy and Marine-Hospital Service, but was defeated by conflicting commercial interests.

I then conceived the idea (1882) of establishing scientific departments in connection with the manufacturing houses, and finally organizing a national society of materia medica experts to cooperate with them, hoping, thereby, to finally effect my original purpose. In this I was more successful, and I have at least lived to see the adoption of my scientific department idea by most of the large manufacturing houses.

What I am now trying to do is to carry out the second part of my plan and secure cooperation between these scientific departments and the medical profession. In this cooperation I also desire to obtain the support of the drug trade in all its branches, also the support of the educational interests of medicine and pharmacy.

Surgery was redeemed from the barbers by the medical profession and given a high place as a branch of medical practice. Pharmacy needs the assistance of the medical profession to redeem it from those who are endeavoring to prostitute pharmaceutical practice and use it for mercenary ends. We must have a profession of pharmacy, but it must be part of the medical profession and carried on in cooperation with the practice of drug-therapeutics by competent physicians. This is the principle upon which my work has been founded from the beginning. So I again appealed to the medical profession for aid in 1901, first by contributing a paper to the Journal of the American Medical Association, April 27, entitled: "Proposed National Bureau of Materia Medica"; and next by contributing a paper to the American Therapeutic Society on the subject of a proposed National Bureau of Medicines and Foods.

Shortly after my contribution to this society I was called to reside in California for several years. There I interested the profession in the proposed National Bureau of Medicines and Foods, and the subject was again brought before the American Medical Association by Dr. Philip Mills Jones, of San Francisco, secretary of the State Medical Society and editor of its journal, and Dr. H. Bert Ellis, of Los Angeles, president of the society just referred to. Dr. Jones conceived the idea of making the proposed bureau the creature of the national, medical and pharmacal societies. Working with that idea he succeeded in having a joint committee appointed by the American Medical and the American Pharmaceutical Associations to consider and elaborate the plan with that intent. This committee reported favorably, but the plan was again defeated by hostile commercial interests.

However, this work was not in vain, for the American Medical Association modified the plan and used it as the foundation of their newly established Council on Pharmacy and Chemistry. What this council will do is still a matter of conjecture. It adopted part of the rules advocated in my original paper, but not all of them. Judging from that fact and other facts which have come to my knowledge, it would seem that the council does not purpose to do any work as a council for the purpose of determining the therapeutic merits of new materia medica products. The original bureau plan included a cooperative investigation of new materia medica products including their therapeutics.

Acting in accordance with this plan the American Pharmacologic Society, was organized, having as its object the cooperative investigation of new products in materia medica and food and their standardization, by a society of experts to include the experts connected with the manufacturing houses, and independent experts engaged in research work. This society adopted the working bulletin system originally devised by myself in 1882 in connection with the scientific department plan.

The working bulletin system deals with materia medica products to fit them for a place in the Pharmacopeia. The object is to secure cooperation between professional and commercial interests for that purpose, so that the burden of expense may be shared by those engaged in their introduction to science and commerce.

The ultimate object of the working bulletin system is to secure cooperation between those engaged in introducing new materia medica products to science and those engaged in the introduction of brands of the same to commerce. As already stated, surgery owes its present high standing scientifically to the fact that its practice is profitable commercially. In the redemption of pharmacy and its restoration to medicine as a part of medical practice, this principle should guide us. If a plan can be successfully worked, whereby scientific pharmacologic practice can be supported by commerce because it pays as an investment for capital, its future is assured.

Therefore physicians should support the Pharmacopeia, for in no other way can pharmacy be redeemed from those who are attempting to convert the practice of pharmacy into a commercial business—in no other way can pharmacy be restored to medicine as a branch of medical science and practice. It is not a question of the retail druggist versus the manufacturer as some would have us believe. The question is pharmacy and the Pharmacopeia versus a commercial business carried on under the *name* of pharmacy by those retail druggists and manufacturing houses alike who conduct their vocation in opposition to scientific and professional requirements, and exploit the sick by misleading advertisements.

DIGEST OF LITERATURE.

REVIEW OF SOME RECENT LITERATURE ON THE BLOOD.

BY

A. G. ELLIS, M.D.

Shape of the Red Blood Cell.—The general teaching that the red blood cell is a biconcave disk is not accepted by all recent writers, there being a tendency on the part of some to return to the old view that they are bell-shaped. Radasch[1] reviews the literature, much of which is contradictory, on this subject and reports personal findings. The latter were made upon fetuses and placentas and led him to conclude that the majority, if not all, of the circulating red cells are bell-shaped and not biconcave. The findings in placentas point to the presence of this form of cell in the adult as well as in the fetus. Radasch emphasizes the necessity of excluding the air in the preparation of specimens, as all cells to which the air gains access collapse and become biconcave. His findings appear to be more a matter of interpretation than of actual new observations as they are based on the study of tissue fixed in Heidenhain's solution and stained by hematoxylin, Van Gieson or hematoxylin-eosin, laboratory methods in common use for years.

Triola[2] asserts that red blood cells are spherical in shape, confirming a similar statement by Malpighi in 1661. Triola's observations were made on the circulating blood in the mesentery of living frogs and also on blood withdrawn from animals by special methods.

Stahl[3] describes a new form of red blood cell found in the chorion of a six-week's ovum. These cells were crescent shaped and nucleated. Many multinucleated corpuscles were found and Stahl expects later to disprove the three popular theories regarding the origin of nonnucleated red cells.

Blood Plates.—Preisich and Heim[4] advance five propositions tending to show that blood plates are derived from degenerated nuclei of red cells. They have studied blood from anemic human beings and also from anemic rabbits and guineapigs.

Wright,[5] from a study of the blood of various animals, is convinced that the blood plates are detached portions of the cytoplasm of mononuclear giant cells of the bone marrow and spleen. By a special method of using the stain devised by him, Wright has found that the two constituents of the cytoplasm of the processes sent out by these cells and the constituents of blood plates possess identical staining qualities. These studies appear to be the most important and promising of recent investigations concerning the origin of these bodies.

Rowley[6] describes blood plates that are much larger than those ordinarily observed and which also suggest the presence of cell structure. With a modification of Wright's staining method she found plates nearly the size of red cells in three varieties of anemia, in malaria, myelogenous leukemia and in normal blood. Rowley believes that with ordinary technic only the central, deeply staining portion of the plates are seen and thus have arisen erroneous impressions as to their size and structure.

J. H. Pratt[7] contributes a critical study of the various methods for enumerating blood plates. He employs a two percent solution of sodium metaphosphate in 0.9 percent aqueous sodium chlorid, in ordinary slide and cover-slip preparations, for the diluting fluid in determining the ratio of plates to red cells; the red cell count is made by the Thoma-Zeiss apparatus. By this method he obtained in 25 counts an average of 469,000 plates per each cubic millimeter of blood.

Kemp, Calhoun and Harris[8] employ as a diluting fluid 10 cc. of formalin to 150 cc. of one percent aqueous sodium chlorid solution. The findings in pathologic bloods, as crystallized by them from the literature, are of interest. 1. In acute infectious fevers the number of plates is usually either subnormal or normal. If crisis occurs it is accompanied by a rapid and pronounced rise in the number of plates. If this rise fails to occur, it is a sign of some masked complication which is usually unfavorable. 2. Anemias. In secondary anemia the plates may or may not be diminished and often are increased. In pernicious anemia they are always greatly diminished, an increase above the normal excluding the diagnosis of this disease. 3. In purpura hæmorrhagica the blood plates are enormously diminished. These writers believe that the investigation of blood plates in pathologic conditions offers unusual promise of valuable results.

Hastings[9] believes that the estimation of plates will become of service in separating the primary from the secondary anemias. He mentions the peculiar fact that they are markedly reduced in chronic lymphatic leukemia and increased in chronic myelogenous leukemia.

Leukemia.—Not a great deal that is positive has, during the past year, been added to our knowledge of the etiology and pathology of leukemia. One of the most noteworthy contributions is that of Gulland and Goodall[10] on the pathology of lymphatic leukemia and chloroma. Their conclusions are based on a study of 10 cases of lymphemia and two of chloroma. So far as their studies are similar, their findings are confirmatory of those of Dock and Warthin. They find: 1. That acute and chronic lymphatic leukemia are essentially the same condition. 2. The bone marrow is the starting point and essential seat of the disease. 3. Proliferating cells from the marrow are carried to other tissues and there multiply. This excess of cells is associated with phagocytosis of lymphocytes in glands, spleen, and other organs including the marrow itself. 4. Many red cells are destroyed by this phagocytosis and available space for the production of red cells is curtailed by lymphocytic proliferation. These two account for the varying and frequently extreme degree of anemia. 5. The bone marrow proliferation is due to a disturbance of mechanism governing cell production rather than a response to chemiotaxis in the ordinary sense. 6. There is no histologic difference between the condition known as chloroma and lymphatic leukemia.

Menetrier and Aubertin[11] furnish an elaborate classification of the "myelomatoses." They divide them into myelomatoses typic, metatypic, and atypic. Under the first are placed the various types of splenomegaly accompanied or not by leukemic manifestations, the hyperplasias. The metatypic, or neoplastic group includes chloroma and erythrocytoma, the latter name being given to red tumors made up of erythrocytes approaching megaloblasts in type. In the third, or atypic group, also neoplastic in nature, the growths are formed of atypic cells, neither leukocytic nor erythrocytic in type and difficult to distinguish from those of other sarcomas. It is represented by the myeloma properly so called or intraosseous medullary sarcoma. This classification, which must be seen in its entirety to be fully appreciated, will not be accepted by all clinicians or pathologists but has a certain value in grouping together variously allied, and in some cases but little understood affections apparently originating in the bone marrow.

New cases of acute lymphatic leukemia are constantly being put upon record. Marvel[12] reports a rapidly fatal case in a girl of 14 in which the clinical history pointed to an infection as the underlying cause, acute tonsillitis occurring three weeks before death. Marvel is strongly inclined to regard the streptococcic tonsillitis as having very much to do with the case. It was the first definite manifestation if not the immediately causal factor. He believes that tonsillar infection has a relation to acute lymphatic leukemia just as it appears to have with endocarditis, myocarditis, nephritis, arthritis and a variety of conditions usually classified as rheumatism.

Matthew[13] reports four cases of acute lymphatic leukemia in which death occurred in from 18 days to 10 weeks. In all but one the lymphocytes were more than 90 percent of the leukocytes. Matthews coincides with those who believe that the leukocytic change begins in the bone marrow, the changes in the lymphatic tissues elsewhere in the body being probably only secondary.

Literature on the treatment of leukemia by the röntgen rays is rapidly increasing. Warthin[14] contributes a valuable paper on the effects upon tissues of the röntgen rays and discusses their use in the treatment of leukemia in the light of a personal study of autopsy material from three cases so treated. The experimental work of Warthin and others shows that the röntgen rays exert a selective action upon lymphoid, myeloid and epithelioid cells, causing nuclear disintegration, fatty degeneration, and necrosis; this may be followed by secondary fibroblastic or endothelioid proliferation. The destruction of lymphoid tissue is always more marked in the spleen than in the lymph nodes or bone marrow and the cells chiefly affected are the younger forms including the small and large lymphocytes and the myelocytes. The röntgen-ray treatment of leukemia and pseudoleukemia finds a pathologic basis in the selective action which the rays have for cells of the lymphocytic and myelocytic types. The improvement noted in most cases thus treated is due to the removal of leukocytes from the general circulation and from the organs where they collect and also to the delayed production of new cells. Warthin regards it as extremely doubtful if the essential disease process is affected to the point of a cure, and the destruction of enormous numbers of leukocytes may in itself be dangerous, as poisons from the disintegrating cells may cause a fatal intoxication. From his studies the therapeutic employment of the röntgen rays in leukemia seems of doubtful value or even dangerous. Careful study will be necessary to establish the fact of a cure in any case. The problem is how much of the abnormal leukocyte-forming tissue can be destroyed before the patient succumbs to the disease or to the treatment. The fatality of the disease, however, should be a sufficient reason for investigating the question to the fullest extent. Warthin's conclusions are most logical and are borne out by clinical results in these cases—temporary improvement, relapse and death. As the agent is of undoubted power its control should be earnestly sought.

Pernicious Anemia.—A case of special interest in connection with the discussion of the röntgen-ray treatment of leukemia is one reported by Renon and Tixier[15]. In this instance a clinical cure resulted from an unusual line of treatment. The patient, a woman of 68, grew worse under the administration of arsenic. Exposures, particularly of the thighs, to the röntgen rays caused distinct improvement. This favorable change continued when in addition diphtheria antitoxin was administered. Finally the antitoxin treatment alone was given for 76 days with clinical cure of the patient. More than 300 cc. of serum was given without untoward result. I have no doubt that relapse will occur but the treatment and result are in many ways suggestive. The authors regard the improvement under treatment by the röntgen rays as due to leukolysins from destroyed leukocytes stimulating the production of red cells and the passage into the circulation of increased numbers of eosinophiles. Diphtheria antitoxin produces a degree of hemolysis and the hemolysins bring about the same reaction in the medulla as does the leukolysins resulting from the action of the röntgen rays. This explanation does not entirely accord with the apparent action of either of these agents under other circumstances.

Eosinophilia.—Simon[16] contributes a historic and personal study of this subject, the latter including observations on himself during an attack of trichinosis and an investigation of hypoeosinophilia in septic conditions. He confirms Opie's findings that the eosinophiles do not discharge their granules nor act demonstrably as phagocytes. That they take a part in the reaction against infection cannot be doubted because of their movements after peritoneal inoculations, their presence around young trichinas in muscle, in the tissues of pus tubes, inflamed appendices, and similar locations, as well as in the outer zone of malignant growths. Simon still holds the impression that the eosinophile is a glandular structure, the granules representing, or being analogous to, gland cells in which a specific secretion is elaborated. Proper stains reveal that not all of the granules are solid, most giving the appearance of tiny vesicles with deeply staining walls. The contents of these vesicles he believes represents the specific product of the granules which may leave the cell without destruction of the sacs which in the empty state possibly appear solid. This secretory product has a function which in some way is related to nutrition.

Stschastnyi[17] presents the results of an elaborate study made mainly upon guineapigs, to determin the histogenesis of eosinophile granules in connection with hemolysis of the erythrocytes in that the fragments of red cells are taken up by phagocytic mesenchyma cells and thus become the granules of what are then eosinophiles. These cells consequently may be formed anywhere in the body that such processes are under way. Such source of origin and Simon's theory of function appear wholy unreconcilable.

Iodin Reaction of the Leukocytes.—Much difference of opinion regarding the value of this sign still exists. Barnicot[18] finds that the intracellular reaction may be demonstrated to a faint degree in normal blood. A positive reaction (that is in pathologic blood) is an expression of degeneration in the cell and means toxemia. It bears no relation to leukocytosis. Continued reaction after crisis in pneumonia aids in suspecting delayed resolution or complication. When accumulation of pus is thought to exist, absence of reaction is of very great negative value. In other than these two conditions the reaction is so inconstant and variable that it cannot be granted a serious place in diagnosis or prognosis of disease.

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TO BE CONTINUED.

RECENT EDITORIAL OPINIONS.

Journal of the American Medical Association.—POLYCYTHEMIA: It now appears legitimate to conclude that this symptom-complex, characterized specially by cyanosis, enlarged spleen and increased number of red blood cells, is a definite clinical entity. The origin is to be sought in the bone marrow where disease results in the production of an increased number of red cells. Treatment has thus far been symptomatic and has proved unavailing.—MEDICAL HISTORY: There appears a growing opinion that medical history of the past has been too exclusively medical, and that the relations of medicine to general culture have too long been neglected. Browning says a much more comprehensive conception of medical history is needed. The relation of medicine to things outside of itself, to general progress, to other sciences and arts, the customs of practitioners in former days, and the development of medical education should be included.—FOURTH OF JULY INJURIES AND TETANUS: The fourth annual analysis shows the results of agitation of this question. Tetanus cases were 405 in 1903, 105 in 1904, 104 in 1905, and 89 in 1906. This saving of life is chiefly due to improved care of blank cartridge wounds. The prophylactic use of antitoxin has prevented many cases. Another encouraging thing, so far as physicians are concerned, about the 89 cases developing this year is that nearly all developed in persons who had previously received no medical attention.—MICHIGAN CHECKS DISREPUTABLE ADVERTISING: The 1903 act of the Michigan legislature giving to the State Board of Registration the power to revoke the license of any physician publishing disreputable or offensive advertisements has been declared constitutional by the Michigan supreme court. This is well, but hits only those who have licenses. Quack advertisements intended to defraud should be made a statutory criminal offense.—FEATURES OF LIFE INSURANCE EXAMINATIONS WHICH DEMAND CORRECTION: The forced methods of insurance companies to "get new business" is not conducive to the best interests of policy holders and is of interest to medical examiners because in a variety of ways they have been made parties to these methods. Any arrangement enabling the agent to coerce the examiner is unfair to the physician and detrimental to the company. When two or three examiners occupy one territory this is made possible by agents taking nearly all cases to a favorite. In such instances the examiner should be made independent of the agents by placing a chief examiner to allot applications equitably or by the physicians themselves pooling their examinations.—RELATION OF THE MEDICAL EXAMINER TO THE MEDICAL DIRECTOR: The examiner should be amenable only to the medical director. The latter and the medical examiners should more often meet as the personnel of the examiners is the most vital factor in determining the deathrate. State and county societies furnish convenient places for such contact. And if annual meetings of agents warrant the necessary outlay and the prizes offered, similar meetings of the examiners would mean better work. The scientific aspect of life insurance examination should stimulate to work for something beside mere fees, beyond which the majority have little or no interest. They should be notified by the society of the outcome of the cases upon which they pass.—MARITAL CONSANGUINITY AND DEFECTIVE CHILDREN: It appears clear that the marriage of cousins should in every possible way be discouraged. The possibility of offspring being deformed or defective is appalling enough under the usual conditions without increasing the chances three or four times as the marrying of cousins does. About half the States have by law forbidden cousins to marry, and it seems their example should be followed by other States.—THE DECREASE OF DRINKING AMONG PHYSICIANS: A religious paper claims that drinking by physicians is on the increase, taking as one support of this declaration the statement that only four of 50 at a banquet declined drink. It is not believed by the Journal that drinking by physicians is on the increase. There are many who drink some, and some who drink too much on occasions or habitually, but there were more of them a generation ago.

Boston Medical and Surgical Journal.—HYDROTHERAPY: Hydrotherapy is prominent among means of physical treatment that are coming more and more to be recognized as essential. The famous baths of Europe have long been frequented by vast numbers of persons and the fact that such baths may be had at home, through more or less artificial means, is being slowly recognized. Medical baths established some years ago in Boston are doing pioneer work in that community and have entered upon a period of increased usefulness. They are conducted solely in the interests of patients and should command a wider support than has yet been attained.—THE FEAR OF LEPROSY: As the consequence of unreasoning fear, an unfortunate Syrian leper is as much an outcast as if he were living in the early years of the Christian dispensation. That one leper should create a panic that spreads far and wide over the country is a phenomenon worthy of comment and study. The campaign of education of the lay press in medical matters is certainly slow.—THE MARKET VALUE OF THE PHYSICIAN'S PERSONALITY: An effort was made some ten years ago to apply the trust principle to the practice of medicine. The plan for a company to supply to subscribers a physician on demand failed dismally because the personal factor between physician and patient is essential. In severe illness the sufferer must have the counsels of the man who has served him and his faithfully during many years. The physician who is well grounded in the principles of his science, is skilful in the application, and who above all has character, need have no fear of the syndicate idea.—DENDRITES AND DISEASE: The theories of Sir William Gowers are always worthy of attention and yet, though his latest regarding the relations of dendrites to disease is not as yet on a basis admitting of general acceptance, it is an hypothesis which appeals to reason and explains phenomena otherwise elusive. To many the explanation will remain unsatisfactory until proof of the motility of dendrites be furnished.—SPELLING REFORM: It is a question if the drastic changes suggested by the spelling reform committee and approved by the President will help the situation, even though the spelling of the English language is admittedly cumbersome and unphonetic. That our spelling may be arbitrarily changed by a committee is certainly a dangerous precedent. Alterations in spelling and language are inevitable and desirable but the gradual acceptance of change is safer than enforced substitution. Experiments seem to have shown that reform should come gradually and thus almost imperceptibly.

Medical Record.—MAGNESIUM SULFATE AS AN ANESTHETIC: Reports show that the effects of this drug as an anesthetic are so variable that there must be some hesitancy regarding recommendation for its general use. Because of the associated dangers and uncertainties it is doubtful if extended use will ever be made of the procedure. We are still in the dark as to the action of magnesium sulfate in tetanus. —SUBCUTANEOUS INJECTIONS OF FAT: Experiments by Winternitz seem to warrant the conclusion that the feeding of persons by the subcutaneous injections of fat is very questionable. In view of the untoward results that may occur, the procedure had possibly better be abandoned.—"TELEPHONE TERRORS:" Improvements in the hygiene of the telephone are certainly indicated and as health authorities exercise their power regarding other public utilities, there appears no good reason why it should not be extended to the telephone. The doors of booths might be kept open to permit of ventilation and American ingenuity ought to devise an attachment that would render the mouthpiece a source of less danger than at present.—A SUBSTITUTE FOR PASTEURIZATION: Much and Romer recommend milking into a vessel containing hydrogen peroxid, then heating to 52° C., and finally adding a special ferment to destroy the hydrogen peroxid. The milk is ready for use in two hours, has not changed in taste, and has been found free from bacterial growth after 21 days. This method still requires commercial and clinical tests to which we look forward. Preserving milk by chemical means has never found favor in this country. When impracticable to preserve milk by sanitary devices and continued cold, then this plan advocated by the German investigators may be found applicable.—FOOD SCANDALS IN GREAT BRITAIN: The comments of British papers on the Chicago meat packing methods has been shown to be premature as inspection in that country reveals the manufacture of food under decidedly offensive conditions. An astounding feature of the situation is that there appears to be no effective legal remedy against such abuses. The revelations from Chicago will in the long run benefit both America and Great Britain. Public sentiment will leave the proprietors of food factories no choice but to put their houses in order.—SENSELESS COWARDICE: A poor Syrian leper has been driven into the wilds of West Virginia, so reported, by the health officers of various communities. One can understand the fear of leprosy felt by the laity, but it is inconceivable that educated medical men should become so panic stricken that they inhumanly cast him out of the community to perish in the forest. The poor sufferer has been treated by his fellows worse than if he were a mangy dog.—BERIBERI OR ALCOHOLIC NEURITIS: Numerous cases of beriberi among Americans in the Far East have shown that they are apparently not immune to that disease. The diagnosis is attended with some difficulty in certain instances, however, and some cases of other nervous affections are undoubtedly placed in this category. Alcoholic multiple neuritis is probably the most frequently thus misnamed. Taylor's experience is that the majority of socalled cases of beriberi in the army are among the hard drinkers. If the cases of alcoholic neuritis were given their true name, less sympathy would be extended than when it is supposed an enforced residence in the tropics brings on beriberi. Incidentally Taylor's experience is confirmatory of the general belief that the use of alcohol is inimical to the welfare of those who are compelled to live in the tropics.

New York Medical Journal.—VEGETARIANISM: This has in recent years acquired so many new followers that physicians must pay attention to this form of living. Stahelin concludes that vegetarianism is by no means a fad and may rightly be adopted among our therapeutics. There is still much to be considered before its indications are exactly defined.—SOME OF THE NATION'S CREDITORS: Why does the Reed monument fund languish? The proposed fund of $25,000 has halted at $17,000 which is ridiculously inadequate for the purpose for which it was intended. It is a good sign when a nonmedical journal speaks so forcibly in honor of a physician as does the *Outlook*. The enthusiasm of that journal seems to have been awakened by Dr. H. A. Kelly's account of Dr. Reed's work. Dr. Kelly is to be congratulated for having inspired such an effort to center general attention upon the work of our army surgeons.—LET US STOOP TO CONQUER: One of the characters, a physician, in a story, is made to say, "I admitted my ignorance with a frankness at which, considering my profession, I have often since had occasion to marvel." This shows the author's estimate of the difficulty with which the average medical man brings himself to acknowledge his ignorance. This estimate is too well founded on fact, though it is not true alone of physicians. The latter, however, more frequently than others are made to feel that for them to confess ignorance is to forfeit esteem. This, as one result, leads to too definite prognoses; to prophesy too specifically is dangerous. The notoriously poor showing made by physicians on the witness stand is largely due to their inability to say, "I don't know." We should strive to get over the miserable dread of the momentary humiliation of intimating there are some things we do not profess to know.—THE CITY PHYSICIAN'S RESIDENCE: A New York architect discusses the question of designing the physician's house so he may have suitable working quarters without marring the outward appearance of the house or interfering with the domestic establishment. The style of house known as the American basement seems to be growing in favor with physicians. A subsequent tenant might not admire a house so constructed, but at present there is always some other medical man to take the place of a vacating physician so that problem need cause him no worry.—RHYTHMICAL TRACTION ON THE TONGUE IN ASPHYXIA: Recent observations of a cumulative character must be proved fallacious or M. Laborde's method of rhythmical traction on the tongue for the resuscitation of asphyxiated persons deserves to lose its vogue. One recent article makes a very strong showing and it now appears wise to treat asphyxiated persons by methods that have stood the test of time and not depend upon Laborde's expedient.—THE PROBLEM OF THE DEGENERATE: The sterilization of certain mental degenerates is from time to time advocated, a recent writer suggesting that this be done in a way that would still permit the power of copulation. There are two results of this scheme to be considered. The wholesale obliteration of a natural right, that of begetting progeny, is not justifiable with our present knowledge of the laws of heredity. The second point is the state of things that would result from the consequent unrestrained licentiousness of persons who were no longer controlled by the fear of begetting children.

We cannot afford an experiment fraught with such prospects.—HUMAN INFECTIONS: It is a prevalent but utterly false notion that the human species is specially the prey of parasitic life, particularly of those producing symptom-complexes corresponding to our conception of the term infection. More than 60 infections are practically limited to the lower animals while the number affecting man are only about 50. Moreover it is unwise to declare that any infection is solely human.—THE RETROVERSION PESSARY: The indiscriminate use of pessaries a few years ago caused them to be almost entirely discarded, but this was a mistake. Properly employed the pessary is still a most useful instrument but the last word has not yet been said about the type to employ. The pessary should not be wholly vaginal, but though it should take its support externally, it should not be any one of the wobbly affairs now on the market.—THE TRAINED NURSE AND CONTAGIOUS DISEASES: Miss Reed contributes an article on the various aspects of this question, believing that the small number of nurses registering for contagious diseases indicates a probable scarcity of those who take such cases. Financial considerations seem at the bottom of much of the difficulty. Higher wages are not given those nursing contagious cases, yet there is almost always loss of time resulting from the necessary "quarantine." It appears that nurses should not be blamed for declining contagious cases if they signify their unwillingness at the time of registration. Yet every effort should be made to ensure a supply for such cases.—TIMING THE ACTION OF MEDICINES: Cooks time the exposure to the fire of various articles so they are done just when needed at the table. Of equal importance is it to give drugs with reference to the time their action is desired. Generally this is decided by convenience, and the physician, unless under special circumstances, who orders a quick acting cathartic at bedtime is in danger of being dismissed. Attention to such small matters as this often decides the status of a physician with a family.

California State Journal of Medicine.—A certain pharmacist in San Francisco was, like so many others, burned out by the fire in April. He resumed business before the smoke had blown away, but on entirely new lines. He decided to run his store, for at least six months, as a purely prescription pharmacy, consigning nostrums, "patent" medicines and sundries to the outside place where they belong. His experience is most interesting. Within the first week a prescription for "antikamnia" was presented. It came not from a quack, nor from an infant in the profession, nor from an ignoramus, but from a physician of some name and standing in the community! Probably there never has been a more disgracefully but consistently dishonest and fraudulent nostrum foisted upon our profession than this deadly "antikamnia," yet here is a physician, presumably a self-respecting gentleman, who continues to help along the fraud! And there were others as ignorant or as lazy who "prescribed" —forgive us the word!—other nostrums, to the discouragement of the pharmacist who wanted to do right. One day a woman came in with a prescription; it was filled and given her, but before leaving she asked for a bottle of a nostrum once popular with a certain class of physicians. Some kind friend had doubtless recommended it, and thus was she aiding (?) the physician. So it went until now the shelves of the "prescription pharmacy" look about as much like a department store as though the effort for decency had never been made. The attempt to be clean and decent was defeated by the very men who should have supported it—physicians!

NEWS AND NOTES.

A Proposed National Public Health Society.—Announcement is made of a meeting to be held in New York, November 15, for the purpose of forming a national society for the preservation of public health. The movement is supported by a score of religious, medical, and scientific organizations, and has been endorsed by many persons of prominence. The object of the proposed society is stated to be to obtain and disseminate accurate information concerning practices and conditions of every kind that are dangerous to the public health and morals, to prevent quackery, criminal practices in the healing art, adulteration of drugs, and the sale of narcotics and alcohol under the guise of proprietary remedies.

Skin Diseases in Public Baths.—A number of mild cases of skin disease have recently been reported which apparently had their origin in the public bath houses. It is said that hundreds of people have contracted disease, despite the fact that the health authorities have paid strict attention to cleanliness. Closets are disinfected twice a week, and the bathing pools are also flushed twice a week. The disease is more prevalent in those parts of the city in which the foreign elements predominate, the majority of the cases reported by physicians being in the southern section. A plan may be devised under which every person who frequents the baths will be examined physically before he or she is permitted to enter the pool, those afflicted with skin diseases, of no matter how trifling character, to be debarred from entering the water.

Pure Food Law Makes Work.—As the result of the pure food law, which goes into effect January 1 next, the Department of Agriculture is making preparations for the increased labor and equipment involved in its enforcement. The working forces and the appliances of the laboratories at Philadelphia, Chicago, Baltimore and New Orleans will be increased largely, while at New York and Boston there will be new laboratories in which to conduct the necessary examinations of all food products coming into this country.

452 Killed in San Francisco.—In all 452 persons lost their lives as the result of the disaster of April 18, according to a report of the San Francisco Health Department. Of the victims 266 were killed by falling walls, 177 perished by fire, 7 were shot and 2 died as the result of ptomaine poisoning due to eating "emergency" canned goods of poor quality. Four hundred and twenty are believed to have been white, 18 Chinese and 4 Japanese. Eleven were less than 1 year old. The figures given relate to the deaths proved to have occurred. The figures relative to males and females and races of the victims were compiled to June 30. Since then ten deaths have been reported, making the total to date 452.

Few Meat Inspectors Pass.—It may be no easy matter to get the 500 inspectors required by the Department of Agriculture to carry out the provisions of the meat inspection law. Only eight out of every hundred of those taking the civil service examination so far have passed. About 3,600 took the examination. The returns so far cover only the Eastern States. Should the proportion of successful applicants from the West be no larger, only about 288 of the required number will have qualified, but a better showing is expected from that section of the country.

Physicians Pass State Board.—The ranks of practising physicians in Pennsylvania receive 355 new recruits out of 405 applicants as the result of the decisions of the State Board of Medical Examiners. Fifty failures were recorded, a few less than last year. The general average was reported good. Of the new licenses 13 will be issued to women. Among the candidates were 25 who failed last year, and ten of these passed this year. Nine did not qualify and one was expelled from the examination room for cheating.

New York Inspection of Milk.—Inspectors of the Health Department have been keeping a more vigilant watch than usual over the milk brought into New York. In the recent hot spell thousands of quarts of milk were destroyed because of various forms of adulteration and improper temperature. Observation has shown that milk can be safely kept for 24 hours in a temperature of 50°. Bacteria increases by compound ratio as the temperature rises above that point. When there is an increase in the child deathrate in hot weather impure milk is a chief factor and the impurity is attributed principally to the fact that the milk has been kept in a temperature above 50°. To prevent the neglect of milkmen to cool their milk properly inspectors visit all the receiving stations and creameries and also the farms where the milk comes from. The inspectors have found that the largest quantity of milk that comes unfit for use is sold in the stores of small grocers, bakeries and delicatessen dealers.

More Deaths on Railroads.—The railroad accident bulletin, which has just been issued by the Interstate Commerce Commission for the three months ended March 31, 1906, shows the total number of casualties to passengers and employes to be 1,126 killed and 17,170 injured. This is an increase of 17 in killed and 52 in injured over those reported in the preceding three months. The number of passengers and employes killed in train accidents was 274, a decrease of 46. There were 1,921 collisions and 1,569 derailments, of which 289 collisions and 167 derailments affected passenger trains. The most disastrous accident reported a collision causing 34 deaths and injuring 24, was due to the striking failure of the train dispatching system. A telegraph operator at a small station, who had been on duty all day and more than half the night, fell asleep, and on awakening misinformed the train dispatcher as to what had occurred while he was asleep.

A Favorable Treasury Ruling.—A decision has been rendered by the assistant comptroller of the treasury to the effect that an acting assistant surgeon, while on duty on Midway Islands is entitled to shore duty pay at the rate of $1,400 per year and to the same pay while traveling to his station.

Malaria used to kill 15,000 persons a year in Italy. In 1902 State quinine was introduced, and last year the mortality fell to 7,835.

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The forced retirement of Professor E. Ray Lankester, from the directorship of the British Natural History Museum, is one more instance of vicious officialdom running amuck. There have been too many such cases, both here and abroad. In this particular case, it is the penalty of having new ideas—such men being especially repugnant to the English government. Professor Lankester is the foremost naturalist living, and his wonderful powers of generalization have enabled him to coordinate the work of special investigators in dozens of directions and point out erroneous conclusions due to incomplete knowledge. There is probably no other man with views wide enough to take his place. He has revolutionized the effete methods of the museum and modernized its classifications and thereby created enmities. Some of the trustees objected to his original appointment and they carried their point at the first opportunity. It is now in order for the British government to remove this blot upon their history and get a new set of trustees endowed with common sense.

Lankester's presidential address to the British Association,[1] August 1, 1906, is most brilliant and has many references to human pathology. He has repeatedly called attention to the fact that governments spend millions of dollars investigating the diseases of a farmer's pigs and cows, but have such supreme contempt for the farmer's son that they will not spend a cent to investigate his diseases. Hog cholera is more important to officialdom than human cholera; one destroys property, the other merely kills people. It was easy to induce the English government to send commissioners to South Africa to find out what killed the cattle, but it refused to send anyone to discover why the people died so numerously. Our government supports only two or three little pathologic laboratories and resents those, but thousands of men are employed on comparative pathology. We need a few more prophets like Lankester, crying out alone in the wilderness at great personal danger. They will bring governments to their senses.

The fetich of disinfection was powerfully described by Dr. C. V. Chapin, in a paper read before the Section on Hygiene at the last meeting of the American Medical Association.[1] He acknowledged at once, that sometimes, contagion is carried by things, as in scarlet fever, yet in the vast majority of cases, he asserts that infectious disease is contracted directly from the sick. The enormous number of mild or "walking" cases of diphtheria, scarlet fever, measles and the like, fully accounts for the persistence of epidemics in spite of thorough disinfection of things. The early death of pathogenic organisms, is a rule having few exceptions, and it shows that disinfection of things is done too late anyhow, even if it were efficient.

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[1] Science, August 24, 1906.

[1] Jour. Am. Med. Ass'n., Aug. 25, 1906.

The worthlessness of ordinary disinfection is the main lesson to be derived from Chapin's brilliant but revolutionary paper. As he has had enormous experience as a health officer in Providence, R. I., he deserves a far more respectful hearing than was afforded him by the assembled sanitarians. Indeed the discussions show that few if any of them comprehended the matter at all. One man was foolish enough to assert that if correct it overthrew the germ theory of disease. Another described it as close to Eddyism—an exhibition of intolerance of new ideas which is a blot upon the Section on Hygiene. He showed that until recently even the standard methods of fumigation and disinfection had little or no lethal effect upon any organism which might happen to be still alive on the walls and furniture. Nevertheless the idea has been almost universal that these processes did disinfect, whereas they did no good whatever beyond what soap and water and plenty of labor would have accomplished. Sanitarians are still under the influence of the ancient mystic ideas of disease, and believe that these worthless and expensive methods were efficacious in driving out disease like an evil spirit.

Chapin's method is to refuse to disinfect a diphtheria house until two bacteriologic examinations of each inmate failed to show bacilli. It is the height of wisdom, for it is stupid to try to kill the dead bacilli on walls, when living ones were in the throats of anyone present. Without disinfection there were recurrences in 1.55 percent of houses, but when modern disinfection was practised there were recurrences in 2.3 percent. His method of calling attention to the real live danger and omitting the imaginary dead one, has reduced the cases of diphtheria from 780 in 1904, to 562 in 1905. There were thousands of alleged cases where disinfection apparently stopped yellow fever, yet we now know that the process had nothing to do with it. We now isolate the patient—Chapin's method with diphtheria. There may be cases of tuberculosis contracted by criminals from bedding and cells recently occupied by patients, but it is boldly stated that there is little or no proof of a similar method in the vast majority of the free population.

Infectious disease is directly acquired from a living man as a rule and not indirectly through a medium. The venereal diseases, for instance, are very rarely transmitted except by actual contact. If carried by a medium, a very short time must have elapsed, for the bacteria or spirochetes promptly perish outside the host. Nevertheless no one favors lack of cleanliness in either case—prevention of spread is the wise course. Neither does anyone favor the use of clothing from smallpox patients, even if the vast majority of patients contract the disease by a more direct contact. Chapin has thus done a great service to sanitation by pointing out one of its misdirected labors and useless expenses and showing the real danger. The public has been deceived into a false security by a little bad smelling gas, whose main use is to compel the opening of doors and windows to let in the more deadly light and oxygen if any germs remained alive.

Disinfect when there is reason is Chapin's wise advice. By disinfection he means real disinfection and not fumes from a few grains of sulfur or a gas in such dilution as to be useless, or a saucer of an inert chlorid behind the kitchen door. He preaches the great gospel of cleanliness—that personal cleanliness which enables Paris physicians to treat scarlet fever, diphtheria, measles and smallpox in what is practically the same ward. He has done well to call attention to the widespread ancient delusion that disinfection which does not disinfect, has had any influence in checking the spread of disease. We regret that the Section on Hygiene has been so intolerant. Ten years ago it utterly and contemptuously rejected a proposition to do something in the way of popular education to stop the awful destruction of life by venereal disease; and it is apparently keeping up its reputation. At such meetings sanitarians should have an open mind and be willing to learn of their errors, instead of resenting enlightenment and vilifying brilliant leaders—the usual course in every walk of life. Reformers must suffer at the hands of the conservative, but such exhibitions always leave indelible blots upon the progressiveness of the science of sanitation.

The Red-Cross scandals in San Francisco deserve more than a passing notice for they reveal a deplorable lack of organization in the national and State societies. When Red-Cross aid is demanded, civil authority is disorganized by disaster and the people are unable to help themselves. The society should be able to step in at once with its relief machinery in working order, to render first aid while the people are reorganizing their own offices. It is the proper means of distributing all relief from the outside. Its methods should be carefully thought out beforehand, and should be flexible enough for adjustment to various situations, yet not so loose as to permit wholesale theft. Its red-tape methods merely increased the confusion due to looseness of organization. As the medical profession is invariably drawn into all Red-Cross work, it is certainly proper for it to advocate better plans for the future.

Deaths due to good sanitation at Panama, has been the startling explanation of the mortality of Jamaica negroes employed on the canal. It is seriously stated that they have cramped lungs due to generations of overcrowding in small tightly closed dirty huts, and that they cannot withstand fresh air and cleanliness of the "model" houses built for them. It is doubtful whether any sanitarians suggested this remarkable explanation, for they must know that the negroes are not living in a proper way if it kills them. The causes must be discovered. There is considerable evidence that the houses are not safe, although airy, bright and clean. The tropical native, as well as tropical animals, go to great extremes to darken their houses or hiding places to escape the sun's rays, and have survived, perhaps, because they did hide from this danger. Sunlight may kill bacteria, but its excessive use in phototherapy is destructive of all other tissues also.

Tropical Houses Should Be Well Shaded.—Even if the sanitarians do not believe in this theory, they should know that it is not safe to disturb the environment of any animal. If the negroes can survive in darkened houses, but die in well-lighted ones, common sense dictates that we give them dark huts. It is worth trying at least, and there is ample precedent. The medical profession is slowly awakening to the fact that sunlight may be too strong for health, no matter how good it is in moderation. Photographs of the American houses built in Panama and Manila show that the designers have violated the rules found essential in Java and India, and that the inmates have little protection from the dreadful heat and glare of the tropic sun. Bad health results and it is due to house sanitation which may be good in temperate climates but bad in the tropics. There are no victims of good sanitation.

The death of Dr. Fritz Schaudinn in Hamburg last June, at the early age of 35, is a disaster to medical science. For some years he has been investigating diseases due to protozoa, and owing to a phenomenal power of observation has made a bewildering series of discoveries which have revolutionized this branch of human and comparative pathology. He pointed out the specific differences between the harmless and pathogenic colon amebas, though many tropical experts have not yet accepted his conclusions. He cleared up the wonderful life-history of the trypanosomes and showed their possible relation to relapsing fever. He cleared up the last point in the life-history of the malaria plasmodium by demonstrating the entrance into human red corpuscles of sporozoites taken from the mosquito's salivary gland. Finally he demonstrated the germ of syphilis and before the medical profession fully realizes that this tremendous step has actually been taken, he is dead. His other discoveries in pure science are equally wonderful, and they all prove that his death is an irreparable loss.

The harmlessness of drinking typhoid infected water has been asserted by Dr. R. G. Eccles[1] in a paper containing a large number of facts stated in such a way as to give an unfortunate impression that pure drinking water is really not essential. He calls attention to the wellknown fact that water, as a rule, acts merely as a carrier, to transport the bacteria from the patient to where it can inoculate our food, when it multiplies and is then swallowed in enormous numbers. It has been long known also, that the healthy stomach and intestine are able to dispose of quite a number of cholera, typhoid, and other bacilli, so that the majority of those who drink unboiled infected water are not infected thereby. Nevertheless no one can draw the line and state when the water pollution has become so great as to be dangerous of itself. Some of the worst epidemics of typhoid have undoubtedly been due to the drinking water directly and not due to the medium of infected foods to multiply the cause. While Dr. Eccles is undoubtedly correct in asserting that typhoid as a rule is due to infections indirectly from water, and not directly, it is nevertheless safe to assume that drinking the water may be fatal. Unpolluted drinking water is best, and if it cannot be obtained, then boiling it is in order, for such means have proved to be preventive of epidemics. In spite of its unfortunate impression, Dr. Eccles' paper and all its facts are really the strongest arguments for supplying unpolluted water to avoid indirect infection. As for drinking infected water, experience shows that though it might be harmless if there are very few bacteria swallowed, it is too dangerous a habit to be given the implied approval his paper gives to a careless reader—particularly a layman.

Instruction in medical economics is being urged upon all medical colleges, by the Council on Medical Education of the American Medical Association. As this is the weak point in all our schools, the effort is most timely. College faculties are likely to confine their attention too exclusively to science, and forget that they are training men for a very practical calling requiring much more than science for success. Many men are said to be "natural-born" doctors and succeed where much better men fail, but most of us know how we floundered around in our first few years of practice, learning how to do the things we were taught should be done but not told how to do them. Success does not really and only require personal magnetism or natural gifts, but also the common sense which recognizes the mental perversions of every invalid. The wise man utilizes these abnormalities instead of trying to brush them aside. He does not use "tricks of the trade," but learns how to cure.

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[1] N. Y. Med. Rec., Aug. 11.

A business course is suggested for every student, and he is to be taught the great natural law that free advice is rarely valued and is therefore likely to be improperly used if not ignored. Free medical service is therefore almost always distinctly pernicious, as it fails to cure. He who does not collect his bills, is probably sending patients to the quacks. It is a notorious fact that all kinds of quackery thrive upon men who refuse to pay their regular doctors. Our altruism is necessary and beautiful, but it is like everything else—harmful if excessive. It injures ourselves, injures the patient, increases pauperism, and must be checked by a well-balanced egotism. If a student is taught something of the practice of medicine as a business, colleges will record more successful alumni than at present. The usual lay comment upon self-sacrificing doctors is pretty but does not buy shoes for the baby.

Knowledge of ethics and organization are also the two great defects in medical curriculums. Only by sad errors do we finally come to know all the details of conduct governing our relations to the patient, to our fellow doctors, and to the public. The subjects must be taught so as to avoid past blunders. There is of course a danger of over-organization in some direction and the organization were better wrecked than permit it to be corrupted by the spirit of trades-unionism, or ruled by cliques and rings. These things guard against. The young man should learn of his obligations and of the good to accrue to him and his patients by joining organizations which may help him. The low state of the profession in the esteem of the public is really remarkable in view of the high opinions held of its individual members. It is because the organization is a frail weakling contemptible for its weakness but just growing into power. When the organization is complete, we may rest assured that its sanitary suggestions will be heeded and public health increased. It is a public duty to strengthen any organization capable of so much public good.

The American Pharmacologic Society presents in our forelying pages a prospectus of its purposed plan, an "open letter" to the medical profession, and its first "Working Bulletin." Upon all of these criticism is invited. They are presented without bias, editorial or on the part of the projectors, and in a sincere effort for therapeutic uplift by constructive methods. There is hope also to avoid many possible deficiencies in plans hitherto placed before the profession, which have been said to have therapeutic nihilism and the discrediting of all experimental therapeutic work as their inevitable outcome. The presented plan has many advantages which will appeal especially to the more conservative, such as the prominence assigned to clinical work by practising physicians, the legitimatising of reports on materia medica research by members of the medical profession, the total obviation of sensational methods so abhorrent to the great working body of medical men, the necessity for fair dealing and dispassionate judgments, and the general tendency to conservation and progress instead of nihilism.

The drug manufacturer not only exists but will always continue so long as the conditions remain which brought his business into existence and make its continuance a necessity. Much that is evil may have arisen through the existence of these great businesses, but more that is good has been established and will remain. It would seem, therefore, better policy to favor development along the higher lines even by emphasizing their natural rewards, rather than by continued attack to arouse opposition and promote retrogression. So much of human nature as is involved in the business of manufacturing drugs possesses psychology essentially the same as in individuals. All of these manufacturers necessarily have the making of money their chief aim though not necessarily their only one. Most of them prefer to make their profits by means which ensure the respect and honor of the medical profession, through which, to a large extent at least, they work. Through lack of knowledge some fail in their efforts, but they are open to counsel and arbitration, although most likely to answer a declaration of war in kind. Should the manufacturers find that harmony with the medical profession and financial gain are impossible, they will probably prefer to discontinue their scientific and ethical departments producing lesser profits with which—plus recognition—they might be content, and devote all their attention to the enormously profitable "specialty" and "private formula" departments, hitherto kept largely in the background even by the reformers. These are a chief support of quackery, the worst foe of the profession and humanity generally. It is a first principle of statecraft to make one's neighbors allies with honor rather than open or secret enemies or even armed neutrals.

The spirit of fair play in its most dispassionate expression should rule all work, particularly investigative, having scientific ends in view. There should be no opportunity for personal motives to intervene, and utmost publicity of all sides alone can inspire fullest confidence. Of the merits of the question involved in the following presentment by the American Pharmacologic Society we leave our readers to judge, requesting the freest expression of opinion from each. Our sole feeling is that in proceedings impugning motives and intents there should be no denial of full audience, and that, therefore, our journalistic colleague, the *Journal of the American Medical Association*, has been in error in closing its pages to a firm it has accused before fullest opportunity to meet all assertions had been afforded. To retrieve that error on behalf of the medical profession may be a thankless task, but is nevertheless right. Instances involving questions of such ultimate significance can never be determined by "star chamber" methods; the profession itself must give the final verdict, and the province of its servants is to present every detail even should the result be, as occasionally in history, a popular reversal of the decision of duly appointed judges.

"Yellow Journalism" in medicine has no place, and the "literature of exposure" merely insures natural revulsion against its promulgators. No opportunity must be given for the thought that sometimes large interests may be wantonly sacrificed in order to advance individual reputations, or that an attack apparently aimed at a manufacturer may really be directed at an organization feared as a rival. Some existing methods savor too much of politics and "high finance" to be altogether consonant with the dignity of true professional feeling. If there does exist such budding error as has been intimated here and there, it behooves us as a profession to return to first principles and secure a reestablishment of confidence and enthusiasm. We believe we express the sentiment of the strongest element in the profession in the hope that the future will show such progress. Whether this comes through change in existing institutions or in the establishment of new—by the perfecting of the Council on Pharmacy of the American Medical Association or the rise of a new body under the auspices of the allied professions of Medicine and Pharmacy—is immaterial; the end is the same, the method should be the best possible.

The "irritable heart" of soldiers was frequently observed during the Civil war and was recognized by DaCosta as a distinct affection. It is not seen so often now because the conditions producing it have not been operative, but it is still found and it deserves a comment because its etiology is practically the same as the similar condition in overstrained young athletes. It is no longer a distinctly military affection, but on the other hand, it bids fair to be found quite often as a result of the unwholesome "training" of immature boys. Under the excitement of battle or long forced marches, young soldiers are capable of exerting themselves to an extent which strained the heart or perhaps even dilated it. This damage, coupled with more or less nervous exhaustion inseparable from mental strain, deficient food and exposure, produced a cardiac irritability which was temporarily or even permanently disabling.

Athletic overstrain and acûte dilation results from the excitement of college contests and there must be as many cases with permanently damaged irritable hearts as among soldiers in war. Mature adults, as a rule, are not so capable of exerting themselves to such a point. Only the youth has the nervous energy and therein is the danger. The cases of "exhaustion" among the defeated "varsity" crew are really blots upon the medical profession—the professional trainer does not know of the after-results and is less to blame. His occupation should be eliminated from all colleges, and the boys left to the more natural methods they instinctively pursue. It is time to teach boys that mere muscularity and hard manual labor are not conducive to longevity, while moderate exercise is. The desire to develop the body as a means of developing the brain, has carried us too far. It is a matter which parents expect the faculties to remedy.

Bad medical advice to the public must be expected now and then, even from men supposedly informed upon the subject-matter of discussion. It is always harmful, of course, but when it comes from socalled experts the effect is truly disastrous. The genius of modern medicine is prevention, and the great mass of investigators are devoting themselves exclusively to the discovery of the causes of disease. The average layman never appreciates, to its full value, any advice which has saved him from sickness or is prolonging his life if he is incurable. The future role of the physician is then unfortunate, as he will never receive full credit for his work. Nevertheless we must strive to convince the layman that it is far better to consult physicians early and often should he feel ill, for by so doing he may be saved from many a prostrating sickness or even death. Little causes may be removed, which if allowed to continue, will accumulate a fund of future trouble.

That doctors are drumming up trade, is the usual cynical retort to such advice. The exact opposite is true for they are increasing public health and lessening their own work. In view of these facts, it is de plorable that a physician should thus write to the lay press:—"Stay away from the doctors as long as you can, use medicines only when they are really necessary, and, above all, when attacked by any bodily affection, give nature every possible chance to assist in a cure." In order that the mischief may be undone, we should publish wide and far, "Consult a reputable doctor as soon as you feel ill and remove the causes he discovers; never use medicine except on his advice; and, above all, when attacked by any bodily affliction help nature in every possible way, for unaided she is apt to have a difficult task." By this means we can lessen the two great evils, quackery and nostrums, which are now in the way of rational removal of the causes of disease.

Six weeks in bed was the old treatment for acute articular rheumatism. Six weeks in typhoid, six weeks in iritis, six weeks in gonorrhea at its best, and six weeks in so many other infections, all suggest that perhaps here there is the basis for some kind of a generalization. Perhaps the organism really requires six weeks to gather its forces and manufacture its supplies to defeat an army of invading parasites of certain species and repair the damage they inflict. It is a thought well worth following up. Even if there is no such general law possible, it is a good rule to impress upon patients even in the most trivial complaints—a cold—an influenza—a depression from overwork.

Be careful for six weeks, might be a good parting blessing for each discharged convalescent. Who knows but that he might thus prevent a permanent lodgment of the slower, more insidious enemies which always lurk around waiting for this period of lowered resistance. There is ample evidence that tuberculosis often starts in this way. The six weeks following measles, mumps and the acute stage of whooping-cough are generally considered a critical—even dangerous—time for a child. Above all else and for the same reason let us teach the old doctrine of six weeks vacation now and then. Man's natural place is on the soil as a herdsman or farmer, who has more than six weeks' rest forced on him every winter. Even the savage hunter is wholly unable to labor except intermittently. Modern city dwellers are the only ones who have the delusion that they can drive the human machine without intermissions.

Instruction in Operative Medicine.—The ideal surgeon should so order his work that he may be regarded simply as a therapist whose practice of the healing art necessitates a degree of manual dexterity not cultivated by the physician, so called. There is, however, a tendency, fostered now by surgeons, now by internists, to make the relations between the two unnatural. Most broadminded men in the profession are heartily in sympathy with anything that tends to obliterate the artificial boundary reared by some to distinguish the two groups. No work of recent years will prove more salutary in this respect than that being carried out by Dr. Harvey Cushing.[1] Not primarily designed for this purpose, it strikes at the root of the matter by dealing with the education of the medical student. Dr. Cushing has instituted at the Johns Hopkins College a unique course of what ordinarily would be called operative surgery but which he prefers to designate by the broader term of operative medicine. Students are in small sections given clinical and operative histories of human patients with certain lesions. These are carefully studied and discussed and then a similar operation is performed upon dogs. Important features in the work are the preparation of the room and patient, including sterilization of materials, the general details of the operation, the cleaning of the room, and the after-care of the patient. Strict asepsis, rather than minute details of the technic of the operation itself, is taught. The intention is to implant in the minds of students a general idea of the medical aspects of the treatment, as well as the general technic of surgery. This it is believed, will aid the physician in comprehending the surgical point of view. The work is elective to third year students but we have no doubt that most will avail themselves of the privilege. The recently erected Hunterian Laboratory of experimental medicine affords excellent facilities for the course. In our opinion the inauguration of this course by Dr. Cushing marks a distinct advance in the practical training of future physicians.

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[1] Bulletin of the Johns Hopkins Hospital, May, 1906.

Reciprocity is at least being recognized as a wonderfully powerful instrument in raising the standards of medical colleges, both big and little. The conditions in the several States at one time required different standards and the man acceptable to a long settled eastern community would not necessarily have been qualified for a license in a new mining camp. But that day is long past nor do we have any wild and wooly frontier places where "any old thing" will do for a doctor—to sign death certificates or act as coroner. Everywhere the public is demanding qualified men—even in places where there is great opposition to laws which exclude the unqualified. Examining boards have been compelled to raise their own standards and ignore licenses from States tolerating a low standard. Such actions were often resented and caused much ill-feeling, but the final results have been most desirable.

The committee on reciprocity of the American Medical Association has reported substantial progress and its report is decidedly optimistic. It gives considerable praise to the Confederation of Reciprocating, Examining and Licensing Boards and urges all the States to join this confederation. The requirements of the council on medical education are not as high as they will be in time, but are reported to be as far as it is possible to go at present—first, a high school education, to be passed on by a State official unconnected with medical schools, second, graduating from a new school having four courses of 30 weeks with 30 hours actual work per week. Third, no others to be permitted to apply for examination before a licensing board whose final approval is a check upon the colleges. It does seem that if all the State boards will get together and change their standards to a common high plane, it will not be very long before a license to practise in one State will be legal proof of the possession of qualifications acceptible in every other—and this is the end in view.

The old practitioner must be protected more than is now the case. In time every man specializes to a certain extent, so that should failure of health compel removal to another State, he is unable to pass an examination which would have been child's play for him some years before. This bars him from a livelihood in places where he would be of extreme value. The matter is being given careful thought, and it is suggested that, in the interval which must elapse before we reach universal reciprocity, it be made legal to license practitioners who have been licensed elsewhere even under a lower standard, if they have proved their worthiness by a certain number of years of successful practice. The whole matter of licensing looks to the future uplift of education anyhow, and cannot cure the past, so that ordinary equity demands that reciprocity for the elder practitioners be brought about at once.

The German Society for Combating Venereal Disease is under the Presidency of Neisser and has been exceedingly active in distributing simply worded circulars of advice to universities and factories so as to reach young men and women who might thereby be benefitted. It recently distributed a circular to young women, a translation appearing in the *Journal of the American Medical Association.*[1] The society omits all references to the moral side of the social evil and confines its efforts to a cold professional statement of facts. It has been criticized for this attitude but is evidently of the opinion that greater good can be accomplished by leaving the moral issues completely in the hands of other organizations.

Natural vs Moral Law in Venereal Prophylaxis.—The society may be correct in this choice of methods, for the bulk of the young people addressed are not of a type which is much impressed by sermonizing. They must be ruled by fear of consequences, and it is a good plan to let them be fully informed as to the hardness of the way of the transgressor. It is substituting natural law for moral law and inculcating the idea that morality is the highest expression of natural law. That is, he who does right, need never fear the consequences; the wrongdoer is the one who must be on the defensive. Nevertheless the circulars do give the impression that they are designed to teach young people how to escape the wages of sin, and not how to avoid the sin itself. In this respect they are very objectionable, and should be greatly modified to suit American ideals.

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[1] Apr. 14, 1906.

CORRESPONDENCE.

INFANT MORTALITY.[1]

BY

LUIS de CASTRO, M.D.,
of Manila, P. I.

(Translated from the Spanish.)

To the Editor of American Medicine:—The subject of infant mortality is one that requires for its proper study, great medical knowledge, long practice in the profession, unusual statistic studies, ample time, and a great mass of facts bearing upon all the circumstances, influences, agents and mediums, which affect the mortality among infants, by a tendency to increase, diminish, or toward the maintenance of the *status quo.*

The causes which produce death in adults take on greater intensity and power when children are attacked, on account of the much smaller organic resistance, comparatively speaking, of the latter. And this is why the statistics, which in all countries show a loss of population among infants, and above all, in earliest infancy, manifest always a larger number, relatively speaking, of deaths among infants of both classes, than among adults, in all seasons of the year, and with the hygienic conditions of the locality normal.

The same causes which act to produce sickness in infants are generally those which contribute most to the mortality, and necessarily so, as usually, the diseases are the determining causes of the mortality under discussion. It follows that, setting to one side the causes which relate to abandonment, lack of care, or the ignorance of the parents of families, in regard to the care needed by infants; scanty means, accidents of birth, inability, insufficient development, monstrosities, and other casual accidents, disease-acquired or congenital, is still the principal factor in infant mortality.

It would be an indeterminable task merely to enumerate the diseases which cause death in children, nor would it be anything more than needless repetition of what is set down in scientific books, monographs and journals; therefore, I shall limit myself to presenting, for consideration, a particular affection, which has been observed by myself, and by some of my fellow practitioners, and which causes many children to fall at the very beginning of their existence. This affection appears to be a neurosis; it resembles eclampsia, although differing somewhat in certain negative symptoms and by its longer duration.

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[1] Read at the second annual meeting of the Philippine Islands Medical Association, Manila, P. I., March, 1905.

In calling it a neurosis, I do not wish to presuppose anything in regard to the nature of the disease, but merely to bring to notice the great likeness which it bears to some of the neuroses, peculiar to children, and so frequent among them.

The infant may be well formed, healthy, and robust in appearance, plump, with good color, and with all its organic functions active. Digestion, respiration, the circulation, and all the secretions offer nothing abnormal; it sleeps and takes nourishment perfectly, and has a happy disposition.

The infant is generally the child of an early and happy marriage, and belongs at least to the middle classes, and therefore lacks nothing necessary for its proper care. The physician may be called because the child has lost its voice suddenly, without any apparent reason, for it had no catarrh and seemed to be well. The patient is found voiceless, rather quiet and dispirited, but it takes nourishment and there is apparently nothing else wrong in the entire organism. The loss of voice is not accompanied by cough, or if this symptom is present, it is slight and not troublesome; there is no fever and if the respiratory organs are minutely examined, are found no physical signs to throw light upon this sudden alteration in the state of health. As is natural, the loss of voice is at first considered as benign, and no consequences are expected, and the condition remains stationary, for four, six, or eight days, without any further symptoms. The voice does not return and at length the infant becomes worse, and its condition, which at first inspired no uneasiness, begins to attract attention. After some days, greenish liquid or semiliquid stools appear, there is slight fever and contractions in the extremities; there is some strabismus. There is usually no vomiting, but the infant is apathetic and shows a tendency to somnolence. Some time later, that is to say, from 6 to 8 days afterwards, and in some cases from 12 to 15 days, during which the condition of the little patient does not improve, the urine is diminished in quantity to complete anuria in some cases; somnolence is succeeded by coma and at last by death, accompanied by convulsions of greater or less intensity; this being the general if not the universal termination of the disease.

The disease may present itself in another manner: An infant which has been well, suffers from meteorism, two or three nights in succession, which passes without notice as a slight matter, very frequent in infants; especially so, as it is not accompanied by any other symptoms, there being no diarrhea, vomiting, or fever. At times, there is a brownish-yellow or violet discoloration, a ring or circle about the eyes and lips; and it is only on the administration of a purge that the greenish stools appear. There is no fever, or if it is present it is attributed to a previous gastrointestinal derangement or to a catarrh. This condition persists for some days, at the end of which time comes on the diminution in urine, convulsions, and finally coma.

It is to be noticed that whatever the form of the manifestation, its progress is slow and its course prolonged; it never terminates fatally within a few days, but is drawn out to such a degree that its course is neither so rapid as that of eclampsia nor so prolonged as meningitis, epilepsy, etc., so that its duration may be said to be a middle term between that of eclampsia and other affections of a neurotic character. Another characteristic, particularly its own, is the lack of a prodromal period, for there is neither any appearance of one, nor does questioning of the parents or family throw any light on the commencement of the affection. They will say the child was well and felt nothing and that medical advice was sought because they noticed a loss of voice, or that for many nights it had suffered from meteorism, in spite of the usual remedies in such cases.

We know nothing of the etiology of the affection. It is present at all times of the year, though it seems to be more frequent when temperatures are somewhat extreme, that is, when heat or cold is most intense. It appears to have been observed in all parts of the Archipelago. I have personally observed it in some provinces where I have practised and I have ascertained by correspondence that it has also been seen by other physicians. Both the infants of the well-to-do classes and those of the needy suffer from it, although it is most frequent (this is merely my own observation) among those of the middle class, and generally in children of young parents of weak constitution.

This disease appears frequently in children from 6 to 20 months, or exactly the period of eruption of the teeth. Beyond the age of two years, I believe it is rarely observed. Nevertheless, I have observed it in infants of one, two and three months, and as I have already said, it is in apparently healthy children that it is oftenest seen.

What is the disease? Is it eclampsia? Is it chorea, epilepsy, or meningitis? I submit this question for the consideration of my fellow practitioners, who have doubtless observed the existence of the disease I have described, and particularly of those who have practised some years in the Islands. Many of us consider the disease as a type of eclampsia, or as it is common to call it here, epilepsy; truly the symptoms much resemble that disease, especially when the fatal termination is approaching. But it is generally true that its manifestations approach those of neurosis, and not less so if it falls far short of beginning or continuing like eclampsia, as has been just described.

Diagnosis is not easy on account of the absence of characteristic symptoms and is reached only by exclusion. I have not collected data in regard to the mortality rate, but it is responsible for many deaths in children, and the prognosis is very grave. The rate depends somewhat on the accuracy of diagnosis, for it is not infrequent to include, under the name of eclampsia, divers affections, the clinical manifestations of which are somewhat similar.

Treatment is symptomatic; various remedies have been employed, and those which have given best results, are, as is logical, sedative remedies. I have sometimes had good results from the use of asafetida, either in substance or the tincture in enemas, repeated several times a day.

THE EPISCOPAL DISPENSARY AND THE MEDICAL CARE OF THE INDIGENT.[1]

BY

C. RADCLIFFE JOHNSON,

of Manila, P. I.

To the Editor of American Medicine:—In giving an outline of the work of the Dispensary of Luke, The Beloved Physician, let me say at the start that it is humanitarian rather than religious. House rent and salaries are paid by the Board of Missions of the Protestant Episcopal Church in America; a large portion of the drugs is supplied by the Board of Health; and a few prominent business men and private individuals contribute regularly toward the running expenses. The indigent patients seem willing to do what little they can by contributing an occasional small amount. In this connection I feel sure that the privilege of free treatments is less abused in Manila than in our large cities in the States.

The Dispensary was opened in January, 1903. Daily clinics were held by a number of American and native physicians who volunteered to aid in establishing a work which they hoped would eventually broaden into a hospital for the care of indigent natives. Six months later I was sent out to take charge. Shortly after my arrival, an effort was made to start a tent ward in which to care for emergency cases. Owing to lack of funds, this had to be abandoned. A fully equipped hospital seems now to be an assured fact at an early date.

During the first year we had 1,409 new patients with a total of 3,972 visits; at the end of the second year, just completed, we can show an increase of 135 percent, having had 3,326 new patients with 8,329 visits. The average number treated daily is 30. Sometimes we see between 50 and 60 patients in one morning, while on religious holidays the clinics are smaller. The establishment by the Board of Health throughout the city of free dispensaries has in no way decreased our attendance.

The proportion of the sexes of those who attend clinics is almost equal, 43 percent being males and 57 percent females. Of the whole number 14 percent are between one and five years. Only a trifle over one-half of 1 percent are children of one year or less. This would seem to indicate either a surprising lack of interest in the condition of infants or else the inability to recognize grave conditions in the one class of patients, in which the mortality is greatest. By far the largest percentage of patients are between the ages of 20 and 30.

In connection with the subject of infant mortality it may not be amiss to comment on what unfortunately seems to be a habit that goes hand in hand with advancing civilization, the abortion habit. It is quite common to have women apply for relief from pregnancy. In some few instances they ask outright to have pregnancy terminated. But generally it is the old story of delayed or scanty menses that need correcting, with a uterus well distended and sometimes fetal movements perceptible. Probably the majority of this class of patients are unmarried, though many are married and seem to think their families already sufficiently large.

Of pathologic conditions, tuberculosis takes the lead in point of numbers. Pulmonary tuberculosis is of course the commonest form. More than 10 percent of all new patients are tuberculous. This is not surprising when we consider the unhygienic habits of the people;

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[1] Read at the second annual meeting of the Philippine Islands Medical Association, Manila, P. I., March, 1904.

their overcrowding in houses that are tightly closed at night; the insufficiency of nutritious food and their absolute inability to appreciate the necessity of care in expectorating. Next to pulmonary tuberculosis, acute bronchial affections are most frequently seen. These are commonest in children and a good reason for their prevalence is found in a lack of sufficient clothing. The change in temperature here between the seasons is not sufficiently pronounced to call for a marked difference in wearing apparel. However, during six months of the year the mornings and nights are quite cool. At such times, the mothers are careful to wrap cloths about the heads of their children, but leave their bodies unprotected except by a short light camisa, that usually does not reach the waist. The number of cases of bronchopneumonia is not as large as one would expect, being only 5 percent of all cases of bronchitis. During the past year I have seen but nine cases of lobar pneumonia.

Next after the bronchial affection, comes enterocolitis and gastroenteritis. These are also confined almost entirely to children of two years and under. Among the poor class here, only about one-fifth of the babies are breastfed. Carabao milk and condensed milk are the artificial foods first turned to, usually with the addition of rice water and very frequently boiled rice. The people are too poor to use ice and apparently too ignorant to keep their milk covered. The result is that it is unnecessarily contaminated before it reaches the child.

Fish is considered a necessary part of the dietary of even very young babies. Small wonder that digestive disturbances and malnutrition are common!

Yet on contemplating the reduced physical condition of Filipino women and the early age at which they become mothers, I look upon the artificial feeding of infants as the lesser of the two evils. Very frequently babies begin to improve immediately after being taken from their mother's milk and put on some other diet. Digestive disturbances seem to be the rule among the poorer classes who live chiefly on rice and fish. The average Filipino is of constipated habits. He will usually say his bowels move regularly but when further questioned, will answer that he has from two to three stools weekly. The number that go to stool once weekly is surprisingly large.

In the past year, there have been only 49 cases of dysentery. In each instance, the patient has been given a wide-mouth bottle and told to return with a fresh sample of feces. A very few of that number have thought it worth while to bring the sample; and none of the samples returned have shown the presence of amebas. Probably, this is due to the fact that many of the specimens were too old for examination by the time they reached the biologic laboratory and it was impossible in those cases to obtain a second sample. In each instance the ovums of intestinal parasites were found usually with *Tricocephalus dispar* and *Ascaris lumbricoides*.

In the 18 months that I have been in charge of this dispensary service, I have seen only one case of typhoid fever. I might state here that when a patient is too ill to come to the dispensary I visit him in his home. During the past year, we have had 200 cases of beriberi. As a rule the type of the disease has been mild and a large majority of the patients have improved under treatment. In very few instances, have there been cardiac disturbances. At least 20 percent of the beriberi patients have been women who have first noticed the symptoms during the puerperal period and these have been of a severe type.

In diseases of women we expressly feel the need of full hospital facilities for there is much work to be done in gynecology.

The number of syphilitic patients presenting themselves is comparatively small. Gonorrhea is either a very small factor in native life or else it is considered too trivial for treatment in all but a few cases. The records show but 40 cases of syphilis and seven of gonorrhea.

In diseases of the eye and ear we have had in all 247 new patients during the past year. In the eye, cataract, keratitis, corneal ulcers and glaucoma predominate in the order named.

Of the diseases of the skin and cellular tissue, our little brown brother has his full share, but as a rule does not apply for relief until it causes him great inconvenience. Impetigo contagiosa, furunculosis, tinea circinata, tinea favosa, scabies and abscesses resulting from small infected wounds of the extremities are extremely common. In the past year, we have had two cases of yaws and two of elephantiasis. Malaria, usually of the quotidian type is quite common and during the wet season a great many cases of muscular rheumatism crop out. Of the acute articular variety in the past year, we have had only four cases.

Owing to the lack of hospital facilities, it is practically impossible to follow up any given class of cases with any degree of satisfaction. It is very hard to obtain specimens of sputum, urine, or feces and still harder to get patients to follow instructions. The question of accurate doses is a puzzling one. It is a not infrequent occurrence to have a patient take a 15 dose mixture in four or five doses. Consequently I resort largely to tablets, pills and powders as the best way of administering medicines accurately.

The question of improving the health of the poorer classes seems necessarily to resolve itself into one of education in the hygienic methods of living.

THE PATENT MEDICINE EVIL.

BY

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of Buffalo, N. Y.

To the Editor of American Medicine:—At this time when so much is being said concerning the "patent medicine" evil and the dangers connected with it, many well-informed persons will learn with surprise that the twentieth century lags far behind the Dark Ages in the art of advertising. It is true that wayside advertising was not then in vogue, and the traveler was not forced to rest his eyes upon extolments of favorite prescriptions, obtruding themselves upon his view at every turn of the highway, and staring him in the face from almost every pasture and outhouse. But he could read in the revered writings of holy and learned men, or hear from their sacred lips, such word pictures as would make the modern fabricator of medical advertisements weep and do penance for his modesty.

There was never a better artist in this line than St. Gregory of Tours, who flourished in the sixth century. As his services have entitled him to be called the "Father of French History," it is not remarkable that he bears witness to his favorite nostrums in his own straightforward way without invoking the aid of testimonials. His sovereign remedy, which he carried about wherever he went, consisted of dust scraped from the tombstones of the saints—preferably that of St. Martin, one of his most honored predecessors—and taken in water or wine. His description of this remedy has been reproduced by Dr. Hugo Magnus, in his book on "Superstition in Medicine."

"Oh, indescribable mixture, incomparable elixir, antidote beyond all praise! Celestial purgative (if I may be permitted to use the expression), which throws into the shade every medical prescription, which surpasses in fragrance every earthly aroma, and is more powerful than all essences; which purges the body like the juice of scammony, clears the lungs like hyssop, and the head like sneezewort; which not only cures the ailing limbs, but, also, and this is much more valuable, washes off the stains from the conscience!"

Would any modern patent medicine proprietor demand as much laudation as this, either from his advertising agent or from those individuals who sign his testimonials?

Although St. Gregory's medieval press notice of his cure-all, consisting of dust from monuments of saints, taken in wine or water, exceeds those of our own times in florid extravagance, the claim cannot be made that it is any more misleading. Indeed, the ancient certificate of merit has at least one virtue which does not exist in similar literature today—except when the exigencies of financial gain make it a necessity. The virtue referred to is that the exact composition of the remedy is given as much prominence in the advertisement as its wonderful healing properties. Therefore, if any of St. Gregory's readers were deceived in adopting his "pious frauds and holy shifts," they had the satisfaction of knowing what deceived them.

St. Gregory of Tours, like all victims of superstition, was subject to lapses from the faith—he sometimes sought the aid of a physician—but, in the hour of his greatest need, he turned again to the wonderful remedy which he advocated so eloquently. Recalling his experiences, he writes:

"What are they (the physicians) able to accomplish with their instruments? Their office is rather to cause pain than to alleviate it; if they open the eye and cut into it with pointed lancets, they surely cause the agony of death to come in sight before assisting in the recovery of vision, and if all precautionary measures are not thoroughly carried out the power of sight is lost forever. Our beloved saint, however, has only one instrument of steel, and that is his will, and only one salve, and that is his curative power."

It was after one of his fruitless experiences with medical treatment, and when he believed himself about to join the saints who had gone before, that he thus addressed his doctor:

"Well, you have exhausted all remedies of your art, you have used up all your powers and juices, but the remedies of this world do not help him who is destined to die. Only one thing remains for me to do. I shall tell you the great remedy: Take some stone powder from the grave of St. Martin and prepare it for me."

No doubt Gregory was a saint indeed, in comparison with our modern promoters of humbugs and miracles, for he was more deceived than deceiving!

ORIGINAL ARTICLES.

ACUTE PYELITIS.

BY
GEORGE H. NOFER, M. D.,
of Philadelphia.

The fact that acute pyelitis is not a very common affection, and that this case presented some interesting features, are my reasons for reporting it.

When we reflect upon the physiology and the anatomy of the pelves of the kidneys, and how often they are exposed to infection, we wonder that acute inflammatory conditions of these structures are not more common. Pyelitis is an inflammation of the pelvis of the kidney; pyelonephrosis an inflammation of the pelvis and the kidney, the inflammation of the kidney being secondary to that of the pelvis; pyonephrosis or surgical kidney is a condition in which the pelvis and the calices of the kidney are distended with pus or with pus and urine. In order to obtain some information in regard to the frequency of its occurrence the latest annual reports of nine city hospitals were consulted with the following results, viz.: The University of Pennsylvania: of 3,071 house cases (medical, surgical, gynecologic, children and obstetric wards) there was one case of pyelonephrosis, one of pyonephrosis, and three of pyelitis; in 3,807 dispensary cases (medical, gynecologic, obstetric and genitourinary) there were three pyonephroses, and two classified as pyuria, what pathologic changes caused the pus in the urine were unknown. Presbyterian: of 2,173 house cases (medical, surgical, gynecologic) there were three pyonephroses. Methodist Episcopal: of 1,016 house cases (medical, surgical and gynecologic) there was one pyelitis as a complication of hypertrophied prostate and valvular heart disease; in 5,358 dispensary cases (medical, surgical, gynecologic) none. German: of 3,089 house cases (medical, surgical and Marine Department cases) there were five pyonephroses and one pyelitis; 7,424 dispensary cases (medical, surgical, gynecologic) none. Jefferson: of 1,882 house cases (medical, surgical, gynecologic, children, private rooms) one pyelonephrosis; 10,537 dispensary cases (surgical, medical, genitourinary) five pyelitis. St. Mary's: (for two years), 3,494 house cases (medical, surgical, gynecologic) none. St. Joseph's: (for two years), 4,962 house cases (medical, surgical, gynecologic) one pyelitis as a complication of cystitis. Episcopal: of 2,433 house cases, (medical, surgical, gynecologic) one pyonephrosis; 7,636 medical dispensary cases, one pyelitis. Pennsylvania: 4,511 house cases (medical and surgical) two pyonephroses. A total of 12 pyelitis, 2 pyelonephroses, 15 pyonephroses among 61,393 cases. We may say therefore that pyelitis is not very common. The report gave no clinical data about these 12 cases of pyelitis; two were classed as complications, and four occurred in the genitourinary dispensary of Jefferson Hospital, these also may have been complications or sequels of other affections of the genitourinary tract. It is undoubtedly true that pyelitis as a complication may be overlooked on account of the lack of signs and symptoms, and may be masked by the severity of the primary disease.

Pyelitis can be classed as acute or chronic, primary or secondary; pathologically the cases are classed as catarrhal, pseudomembranous, gangrenous, suppurative, or hemorrhagic. Quoting from Martin and White: "Pyelitis may be secondary to nephritis (descending) or to ureteritis (ascending), or rarely to perinephritis (contiguity); the ascending inflammation is the common form. The most frequent predisposing and exciting causes of pyelitis are, (a) the infectious diseases; whether in these cases the local inflammation is due to toxins or alterations in the urine has not been determined; (b) traumatism, a rare but undoubted cause; (c) exposure to cold; (d) drug irritation as from irritating diuretics, the balsams, the ethereal oils; (e) nephritis, particularly the interstitial nephritis of the gouty; (f) venous congestion due either to general stasis or to local stasis as in chronic valvulitis, pregnancy, floating kidney, abdominal tumor; (g) perinephric inflammation; (h) mechanical irritation of gravel or calculus; (i) tubercle, malignant disease, parasites; (j) and most important of all cystitis, particularly when it is associated with obstruction. Pyelitis is usually bilateral."

The case is as follows:

G. W., male, aged 37, single, plaiter for the last four years, born in Philadelphia, which has been his home without interruption.

Family History.—Parents living and well. One brother living and well, three brothers died in infancy. Family history is good.

Personal History.—He has had measles. Scarlet fever at seven years, complicated by a bilateral suppurative otitis media which ceased discharging in his fifteenth year; at this time also he had an abscess in the posterior cervical region which healed promptly. Pneumonia at 18. No history of any venereal infection, never had any discharge from the urethra (the importance of correct answers was emphasized). In July, 1904, he weighed 151½ pounds; in September, 1904, after a stay at the seashore, he weighed 155 pounds. In February, 1905, weighed 149½ pounds. Since the fall of 1904 his work was very heavy, necessitating his remaining at night, this accounting probably for the loss of the 5½ pounds. His disposition is of a "nervous" kind. Off and on during the last two years, he has felt tired at night, dragged out, backache, easily irritated and desired to be let alone; occasionally he had severe headache localized above the right eye accompanied by lacrymation. What these signs of fatigue were due to, is problematic, his place of work is insufficiently ventilated and sunshine never reaches the room; there may be an explanation in the fact that he is decidely myopic, he has glasses but only uses them occasionally. Two weeks prior to his illness his general condition was growing worse day by day, nothing definite "only didn't feel as well as formerly," and was somewhat depressed. He never was troubled with frequency of urination, and never had any trouble with this function.

Present Trouble.—He first consulted me on June 8, 1905, when he complained of weakness, giddiness, being tired, headache, chilliness, anorexia, backache, tongue coated, bowels slightly constipated. Temperature 100.4° F., pulse 90. By June 9, he was no better, his temperature was 100.6° F., pulse 96. The patient was advised to go to bed. On the morning of June 10, when seen in bed his temperature was 101° F., pulse 100, and the backache had localized itself in the right lumbar region and extended down along the course of the right ureter, and into the hypogastrium immediately above the symphysis pubis. There was some pain and tenderness in the right groin at the external ring, some frequency of urination and some burning during the act. Urine: Acid, amber, cloudy, 1,022, thick sediment. Albumin present, no sugar. Miroscopic Examination: Many pus cells, very few red blood cells, bacteria. On June 11, the inflammation had extended down the right vas deferens into the testicle, and was marked; leeches were applied to the right groin. There was no more frequency of urination, nor burning, and the pain in the hypogastrium disappeared, while the pain along the ureter was very slight and disappeared in a few days; but the pain in the right lumbar region remained the same; it was never severe, was deep, and the patient had to palpate the region before he could locate it, and then always about a point which corresponded to the middle, and inner border, of the right kidney. He described it as a soreness resembling the feeling of a bruise. The fever was higher and he complained of sleeplessness. That evening he was somewhat delirious, having hallucinations of vision (saw bleeding heads along the top of the wall and wanted newspapers pinned on the wall).

On June 12, his mind had cleared, fever was somewhat higher. Widal reaction negative. On June 13, temperature reached 103° F., the orchitis was running the usual course. In the evening he was taken with severe headache, affecting the entire head. The pupils were equal, reacted to light and accommodation, no paralysis of the ocular muscles, knee-jerks normal, no ankle-clonus, no Babinski sign, no vomiting. An ear examination was negative, showing the signs of an old double otitis media which was quiescent. Urine: Acid, yellow, 1,008, cloudy, white precipitate. Albumin present. Microscope showed many pus cells bacteria. On June 14, the headache, which had diminished during the day, increased at night. June 15, Widal reaction negative, headache disappeared, the fever began to decline, and by June 18, his temperature was 98.6° F., pulse 76. The orchitis rapidly improved (there had been no urethral discharge), he felt better in every way except that the soreness in the right lumbar region remained, although not as prominent. His tongue remained slightly coated.

The fever was reduced by sponging and ice caps; lead water and laudanum, and ichthyol ointment, with elevation of the testicle for the orchitis; veronal 0.65 gm. (10 gr.), trional 0.5 gm. (5 gr.) at night for sleeplessness. For the two severe attacks of headache sodium bromid 1.3 gm. (20 gr.) every two hours was very effective: urotropin was used as a urinary antiseptic;

strychnin sulfate 30 gr. (30 gr.) every four hours when the pulse began to increase. Liquid diet; water freely; and the bowels were kept open with calomel, and magnesium citrate. By June 23, patient was out of bed, and by June 25 was in the open air. The slight soreness in the right lumbar region remained, and the tongue was slightly coated. June 19. Urine: Acid, yellow, cloudy, 1,010, white precipitate. Albumin present. Microscope showed many pus cells, bacteria, three uric acid crystals. June 22, urine the same as on June 19. June 24. First urine of today quite clear, second cloudy and contained many pus cells. Spreads of the urinary sediment were made and stained with carbol-fuschin and Gabbet's solution; no bacilli staining red were found showing the absence of the tubercle bacilli and of any organism that might resemble it. Spreads were stained for gonococci but none was found. Bacilli were found which morphologically resembled *Bacilli coli communis;* and cocci, lancet-shaped, resembling the pneumococci, arranged in pairs and chains. It was hoped that the trouble was disappearing; the urine had been constantly watched for stones with negative results. June 30, the patient visited my office, temperature 98.4° F., pulse 78, the tongue was slightly coated, and the soreness was still in the right lumbar region, the testicle was giving no trouble. He weighed 140 pounds. On July 1, I was sent for, he was in bed, had been chilly, the soreness in the right lumbar region was more marked, headache, anorexia, tongue more coated; following the chilliness he became feverish, temperature 103.4° F., pulse 114; urine showed a trace of albumin and many pus cells. On July 3, blood was examined for malarial parasites and none was found; the leukocytes numbered 8,333, temperature 100.4° F., pulse 86. July 4, a rectal examination showed that the prostate gland and the seminal vesicles were normal; sounding the bladder for stone was negative. A catheter was passed easily and the bladder irrigated with warm sterile boric acid solution which returned clear; the bladder evidently was not the seat of the suppurative process.

On July 2, a record of the daily amount of urine was kept, and continued to be kept daily until August 18. The search for stone was continued with negative results; the urine being strained through very fine linen, the urine never gave any indication of a stone, practically no uric acid, phosphatic, or calcium oxalate or other crystals were found. By July 5, the temperature was normal, appetite was returning, no headache, but the tongue did not become clean, there was still some soreness in the right lumbar region; otherwise he was feeling well. The bladder irrigations were given daily. He seemed to be progressing, but on my visit July 11, his temperature had risen to 104° F., pulse 106, with the same phenomena that attended its rise on July 1; the bladder irrigations were discontinued. Urine: Acid, yellow, 1,012, cloudy, flocculent precipitate, albumin present. Microscope showed many pus cells, bacteria, few round and squamous epithelial cells.

By July 14, his temperature was 97.8° F., pulse 74, tongue remained slightly coated, there was still some soreness in the right lumbar region; otherwise he felt well.

The temperature during these two rises was reduced by icebags and cold sponging. The diet was liquid during febrile and the afebrile periods. Urotropin was continued. He continued to do well until July 21, when his temperature rose to 104.4° F., pulse 116, with the same phenomena as before. The soreness in the right lumbar region became more marked, chilliness followed by fever, anorexia, tongue became decidedly coated.

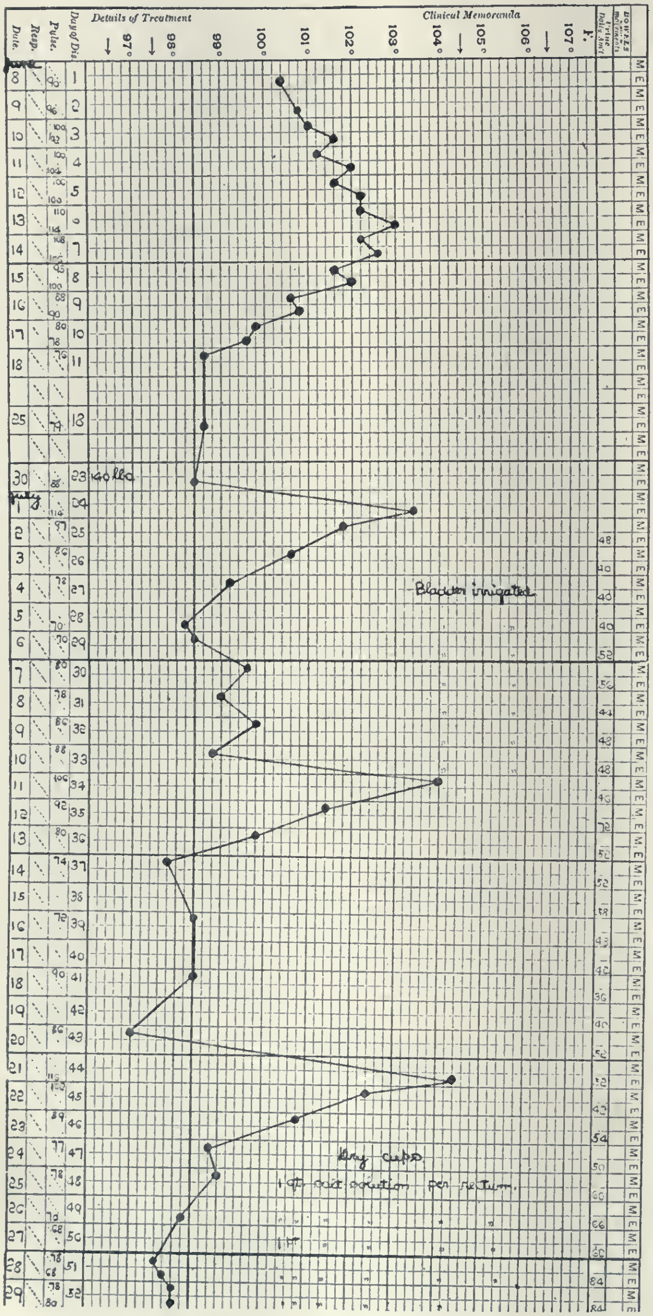
Dr. R. C. Rosenberger examined the blood and urine, and reported "no irregularity of erythrocytes in shape or size. No malarial parasites. No pigment granules in the leukocytes. Leukocytes (temperature 104.4° F.) numbered 23,000, urine acid, yellow, 1014, cloudy, thick, precipitate. Albumin present. Microscope shows many pus cells, bacteria, very few epithelial cells, no casts, no crystals." On July 22, Dr. W. Joseph Hearn saw the patient with me and agreed with my diagnosis of acute pyelitis of the right kidney.

Rectal suppository of quinin sulfate 0.65 gm. (10 gr.) was given night and morning for one day, and then 0.3 gm. (5 gr.) was given night and morning for two days; also the following:

Sodium bicarbonate	5.18 gm.	(80 gr.)
Potassium bicarbonate	5.18 gm.	(80 gr.)
Spirit of nitrous ether	30 cc.	(1 oz.)
Peppermint water sufficient to make	119 cc.	(4 oz.)

Take 7.5 cc. (2 drs.) in water three times a day.

As after the two previous relapses, his temperature became normal in three or four days. On July 23, in the afternoon, he had one sharp pain, "about six inches long shooting down from the sore spot toward the bladder." On July 24. four dry cups were placed over the right lumbar region, and oil of sandalwood, 0.3 cc. (5 m.) was ordered three times a day. On July 25, the soreness in the right lumbar region had disappeared, and never returned; there was some superficial tenderness where the cups had been but this soon disappeared. Daily rectal injections of one quart of hot saline solution were ordered, this was given twice, when the quantity was reduced to one pint daily. The rectal injections increased the amount of urine at once, they were continued until August 11; the quantities of urine from July 23 to August 11 were as follows, 54, 50, 60, 66, 62, 84, 84, 92, 84, 89, 90, 89, 82, 86, 84, 72, 80, 88, 87, 68 ounces. The search for stones was continued with negative results. His temperature reached 98.8° F. on July 24, it remained normal thereafter. July 25, spreads of the urinary sediment were stained with carbol-fuchsin and Gabbet's solution but no bacilli taking the fuchsin stain were found. July 27. Urine: Acid, yellow, 1,008, cloudy, thick, precipitate. Albumin present. Microscope, many pus cells, bacteria. On July 31, sodium bicarbonate 0.65 gm. (10 gr.), potassium bicarbonate 0.65 gm. (10 gr.), peppermint water 7.5 cc. (2 dr.) three times a day, was given and continued until August 9. August 1. Urine: Acid, yellow, faintly cloudy, 1,008, flocculent precipitate. Faint trace albumin. Microscope, pus cells not as abundant, bacteria, more epithelial cells than formerly.



August 3, urine the same as August 1.

August 6. Urine:—Acid, 1,004, yellow, faintly cloudy, flocculent precipitate. Faint trace of albumin. Microscope, pus cells, bacteria, three uric-acid crystals, few hyaline casts.

On August 13, the oil of sandalwood was increased to 0.6 cc. (10 m.) three times a day. On August 4, the urine was clear, from then on it was clear and faintly cloudy irregularly until August 17, when it was clear, microscopic examination being negative, as were also the physical and chemical examinations. The urine has remained normal ever since.

By August 17, the tongue finally became clear and remained so. There were never any pulmonary or cardiac symptoms; physical examination of the heart and lungs which was performed daily, was always negative. The pulse from August 10, when patient began to go in the open air, was somewhat accelerated, but as he gained in weight and strength it became normal.

On August 11, weight was 132 pounds, on August 14, 134 pounds, on August 18, 135 pounds.

He left for the country where under a liberal diet, milk and eggs, and fresh air he gained weight rapidly. On August 26, he weighed 144 pounds, on September 2, 149 pounds, September 9, 152 pounds, September 13, 155 pounds, on which date he returned from the country, feeling better and looking better than he has for years. After the rectal injections were stopped he was annoyed by a numb feeling over the sacrum and between the shoulders, this disappeared under massage of the back, and rubbing with alcohol.

The features which I would emphasize are: The testicle was not involved in the three subsequent febrile periods; the tongue remained coated throughout, until August 17, during afebrile periods it was fairly so and during the febrile distinctly coated; the fact that the soreness disappeared after the application of the dry cups, the soreness was worse usually during the three relapses; the stimulating effect of the rectal saline injections on the quantity of the urine, the excretion of the increased amount of urine gave him no annoyance; the quinin suppositories were ordered by Dr. Hearn, not as an antiperiodic but as "antipyretic and to control the capillary circulation;" the three relapses came on suddenly, with the same phenomena, and subsided in three or four days, leaving him feeling well, but the soreness in the right lumbar region remained and the tongue did not become entirely clean. No stones were found.

In considering this case, we ask what was the cause of the acute orchitis? There had been no rheumatism, mumps, gout, gonorrhea, traumatism, no exposure to cold or wet, no syphilis, no tuberculosis, and no specific fever. It seemed to be a descending infection, first the pain in the right lumbar region, then it descended along the right ureter, then there was some irritation of the base of the bladder, and then the infection seemed to travel down the right vas deferens, for, first there was tenderness in the right groin at the external ring, followed by tenderness along the spermatic cord, followed by inflammation of the testicle. It was probably an infectious process. After the orchitis had subsided the trouble seemed to localize itself in the pelvis of the right kidney.

In our differential diagnosis we must consider the following:—Tuberculosis of the kidney; there was no decided loss of weight previous to the onset of the illness, no cough, no sudden onset of polyuria and frequent micturition, no paroxysms of renal pain, no sweats, and tubercle bacilli were not found by staining, the clinical picture was not a tuberculous one.

Malignant disease of the kidney can be dismissed. Stone in the kidney; there was no nephritic colic, no frequency of micturition, no difficulty in urination, no blood (only a few cells were found microscopically at first), no stone or gravel were ever found, the urinary picture never indicated stone.

Stone in the bladder; no stone found, bladder examination negative, no frequency of micturition or difficulty in urination, no pain in bladder, penis, rectum, or perineum, no blood.

Cystitis was not present, there were no symptoms, bladder irrigations always returned clear.

Rectal examination of the prostate and the seminal vesicles was negative, never any urethral discharge, and no signs of stricture.

Abscess of the kidney and perinephritic abscess; no constitutional symptom of suppuration, the leukocytosis of 23,000 on July 21 with temperature of 104.4° F. was probably febrile, no swelling, or great pain or tenderness in the lumbar region, no chills and sweats, and the urine never showed any signs of disintegration of the kidney.

By exclusion, and by the course of the disease and the fact that the soreness was always on the right side, the diagnosis is acute pyelitis of the right kidney. To render this diagnosis positive beyond doubt, the ureters should have been catheterized and the separate urines studied. If there had been a return of the fever, surgical intervention would have been considered, but before any operative procedure had been performed I intended to have the ureters catheterized and the separate urines studied and also to have a röntgen-ray picture made; fortunately this was not necessary.

Granting the diagnosis of pyelitis, it was of an acute course of a primary type, for previously there was no perinephric trouble.

and no trouble in the genitourinary tract below the pelvis of the kidney, and considering the causes as given by Martin and White we can find none of the ascribed factors; he had had pneumonia about 19 years previously, had not been taking any drugs, no cystitis, no stricture, no gonorrhea, no traumatism. If primary, how was it caused? The urine always showed a large number of bacteria; I think it was bacterial in origin. To determine this positively a complete bacteriologic examination of the urine should have been made. In the examination of the stained spreads of the urine two organisms were noted, one resembling *coli communis*, and the other the lancet-shaped coccus resembling somewhat the pneumococcus; the presence of the latter organism I cannot explain. In this connection, the following is important, from Taylor:—"In the normal urethra are found innocuous and virulent microbes, the history and pathogenic power of which we as yet know little;" in speaking of the gonococcus he says:—"They never occur in chains," From notes on a lecture on gonorrhea by Professor Orville Horwitz:—"The normal urethra is the habitat of a number of microorganisms, staphylococci, streptococci; there have been described four varieties of diplococci." The presence of *B. coli communis* can be easily understood; I favor this organism as the causative factor, because of its more frequent occurrence and abundance, because there were some signs of disturbance of the gastrointestinal tract by the persistently coated tongue, and because I recall that after two of the relapses, although his bowels had been moving daily, the administration of magnesium citrate caused copious stools with hard lumps of fecal matter.

What caused the relapses? They may have been caused by the absorption of toxic material from the site of inflammation, the relapses were about ten days apart, the daily quantity of urine was not decreased during the relapses, the amount of pus remained the same. I do not think the absorption theory probable. The relapses may have been caused by the absorption of large numbers of *B. coli communis* from the intestinal tract.

Dr. J. R. Arneill[1] of Denver, Col., has reported a case of "Infection of the Urinary Tract by the Colon Bacillus, Simulating Uremia," in this case cultural investigation showed "pure culture of the colon bacillus." In his paper he also quotes a case reported by Allen, it was; "a case of chronic pyelitis diagnosed as renal tuberculosis, and operated as such, which proved to be an infection of one of the kidneys with a pure culture of the colon bacillus."

These two reports show that the genitourinary tract is susceptible to infection by the colon bacillus, and lend weight to the diagnosis of my case as acute, catarrhal, primary, pyelitis of the right kidney, due most likely to *B. coli communis*.

At present, September 1906, the patient is in excellent condition; has had glasses prescribed, which he wears continually, and is free from the fatigue symptoms of eyestrain.

A SERIES OF CASES ILLUSTRATING THE OCULAR COMPLICATIONS OF HYSTERIA.[2]

BY
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In the grave forms of hysteria, which are characterized by repeated convulsive attacks, paralyses and contractures, and perversion of the normal psychic condition, the eye symptoms, while of considerable importance, are apt to receive little attention, and in the treatises on hysteria, are dismissed with a few words. Such cases are not often seen by the oculist, except in the general hospital, but occasionally patients present themselves complaining of obscure eye conditions, and the other stigmas necessary to complete the diagnosis of hysteria may be discovered only after careful search. Accepting Strümpell's definition of the disease as a "purely functional disturbance in equilibrium in the action of the various cerebral centers on each other, and on the lower nerve centers" we may, with Schwarz, group its chief ocular manifestations according to the following scheme:

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[1] *American Medicine*, May 20, 1905, Vol. IX, No. 20.

[2] Read before the Section on Ophthalmology of the College of Physicians of Philadelphia, October 17, 1905.

A. *Abnormal subjective sensations*, such as dryness of the conjunctiva, feeling of foreign body, ocular pains, photophobia, light and color sensations, and hallucinations of various sorts.

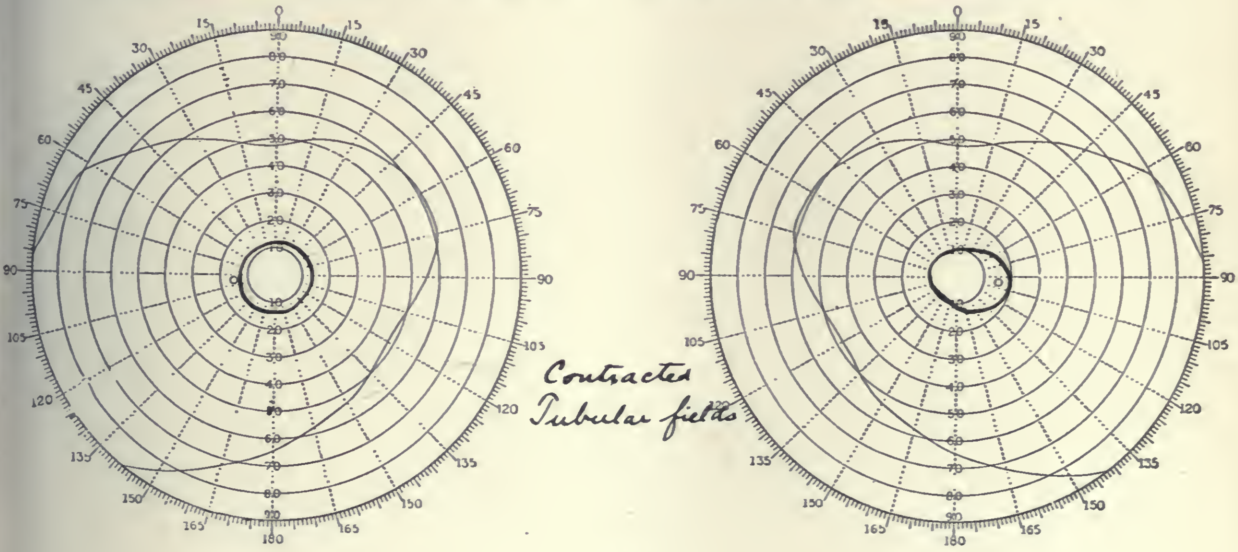
B. *Disturbances of Vision.*—1. Of direct vision, (a) diminution of visual acuity; (b) loss of color perception; (c) light sense disturbances. 2. Visual field disturbances, such as contraction in extent and reversal of the order in which colors are perceived. 3. Indirect visual disturbances, produced by disturbances in the motor apparatus, including (a) double vision (both monocular and binocular), and (b) micropsia and megalopsia.

C. *Disturbances of the Muscular Apparatus.*—1. Of the internal muscles, (a) of accommodation, either spastic or paralytic; (b) of the pupil, myosis and mydriasis. 2. Of the external muscles. Such as convergence spasm, conjugate deviation, and nystagmus; and less certainly paralyses of various muscles or groups of muscles, the most common of which is convergence insufficiency. 3. Of lid movements, in the form of clonic and tonic spasms, the latter of which appear as pseudoptosis.

D. *Disturbances of sensation*, such as hyperesthesia and anesthesia of the conjunctiva and cornea.

E. *Disturbances of secretion*, lacrymation, etc.

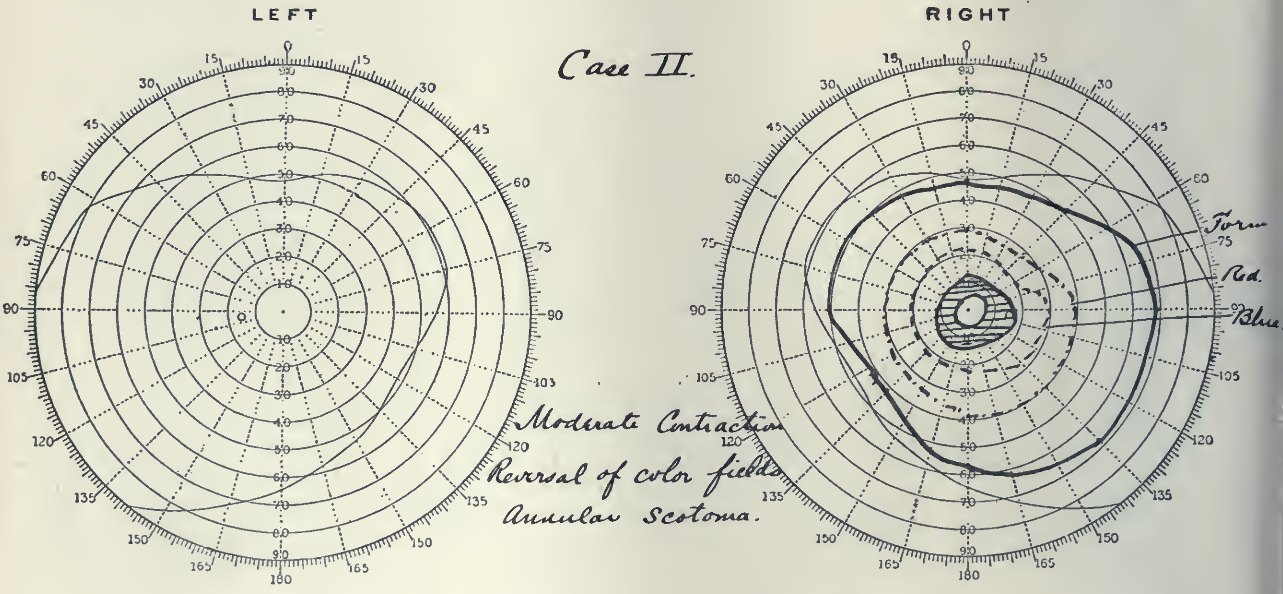
The most common conditions found are the alterations in direct vision, changes in the visual fields, in accommodation and pupil phenomena, and in the sensibility. These may appear singly or in various combinations. I desire to report briefly five cases illustrating the more common complications; four of the patients were examined at the eye clinic of the University of Pennsylvania, in the service of Dr. Geo. E. deSchweinitz, and the fifth, a private patient, was seen during his absence from the city. I am indebted to Dr. deSchweinitz for the privilege of reporting them.



Contracted
Tubular fields

CASE I.

CASE I.—Mrs. F. M., aged 20, was admitted to the University Hospital March 16, 1905, and was referred for eye examination by Dr. Wm. G. Spiller, who has kindly furnished the following history taken at the time of her admission. She comes of a decidedly neurotic family, one great aunt having had convulsions, from which she recovered. The patient was in good health, until four years ago. She began to menstruate at 16, and was very irregular, until three years ago, when a ventral suspension of the uterus was performed at the Johns Hopkins Hospital. She was married at 19, but has had no children or miscarriages. She was first examined in June, 1904, by her present physician who found her in what he considered a hysteric convulsion, which was followed by paralysis of the left upper and lower limbs. In a short time both limbs became spastic and contracted, so that they could be straightened only with the exercise of a good deal of force. The contracture of the leg disappeared, after some months, but that of the hand persisted. She was confined to bed between the months of June and September, 1904, and during this time was nauseated and vomited all that she ate so that she had to be fed by nutritive enemas. She became very much emaciated and developed a marked irritability to sound, the rattle of a wagon sending her into a convulsion. Later she passed into a state of stupor, with insensibility to sound, was apparently blind and could not talk. After six weeks of this condition she suddenly returned to consciousness, was able to see, hear and talk, but after an hour she lapsed again into stupor. In September, 1904, she began gradually to improve and her faculties returned to her, but she spoke in a fashion that might be described as "baby-talk," omiting c's and s's. While in bed from June to September she did not menstruate, but has done so for the past four months, and at these times she appears worse, complains of pelvic pain and often goes into convulsions. During a convulsion she rolls on her side, lapses into unconsciousness, has violent clonic spasms which soon become tonic, and last from two to five minutes. The arms and legs are thrown about irregularly, and chairs have to be arranged about the bed to prevent her from throwing herself out. At times there has been marked anesthesia of the skin and pins can be stuck into her without causing pain. She has been unable to walk since June, 1904, and the convulsions have at times been repeated as often as ten times in an hour.



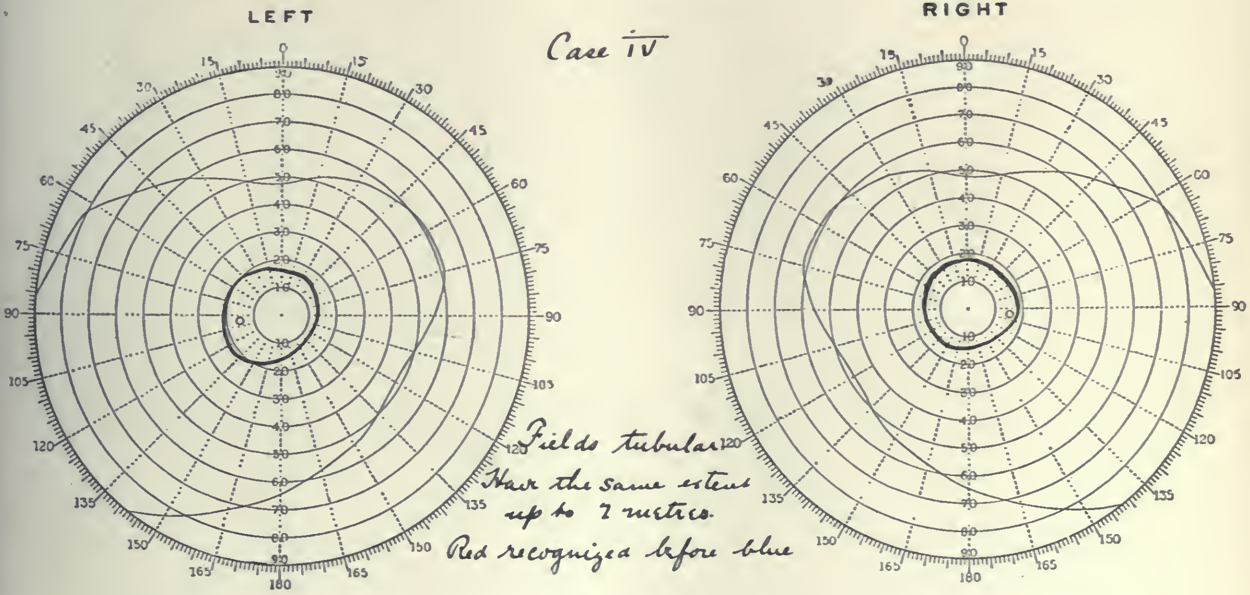
Case II.

Moderate Contraction
Reversal of color fields
Annular Scotoma.

Examination by Dr. Spiller showed the following conditions: Spastic contracture of the left hand, the thumb being held in the palm between the middle and ring fingers. This contracture can be overcome completely by passive movement, and when the fingers are finally straightened, there is a temporary contracture of the hand to the ulnar side. There is hypalgesia and hypesthesia of the entire left side of the body, including the face, conjunctiva, the tongue and mucous membrane of the mouth, of the arm and leg; the line of demarkation is sharp in the median line of the entire body. The stick of a pin causes no discomfort in any part of the left side. The right side of the body is sore, and there is decided tenderness over the spine. The sense of smell, hearing and taste is also impaired on the left side. The right upper limb shows frequent jerking movements; the biceps, triceps and patellar reflexes are prompt on each side. No Babinski. She is unable to stand without support.

Physical examination and urine examination showed nothing further abnormal.

The eye examination made March 16, 1905, in the Eye Dispensary showed the following condition: O.D.V. 6-100. O.S. 6-150, improved by the use of -0.25^s to 6-45 in the right and 6-100 in the left, the greater loss of vision of the left eye thus corresponding to the side most affected by the hysteria. There was a true paresis of accommodation which was not helped by indifferent lenses. The pupils were equal, and responded promptly to light. The eye grounds were entirely normal, and showed a general hypermetropia of about 2D. Macropsia and micropsia were present in O.D., but were not determined in O.S., on account of poor vision. The visual fields were contracted, that on the left to 10° and that on the right slightly less, and were typically tubular, remaining of the same extent at a distance of 2 meters, as at 33 cm. She recognized red but not green or blue with the left eye, but recognized all with the right. In the contracted state of the fields it was impossible to determine the order.

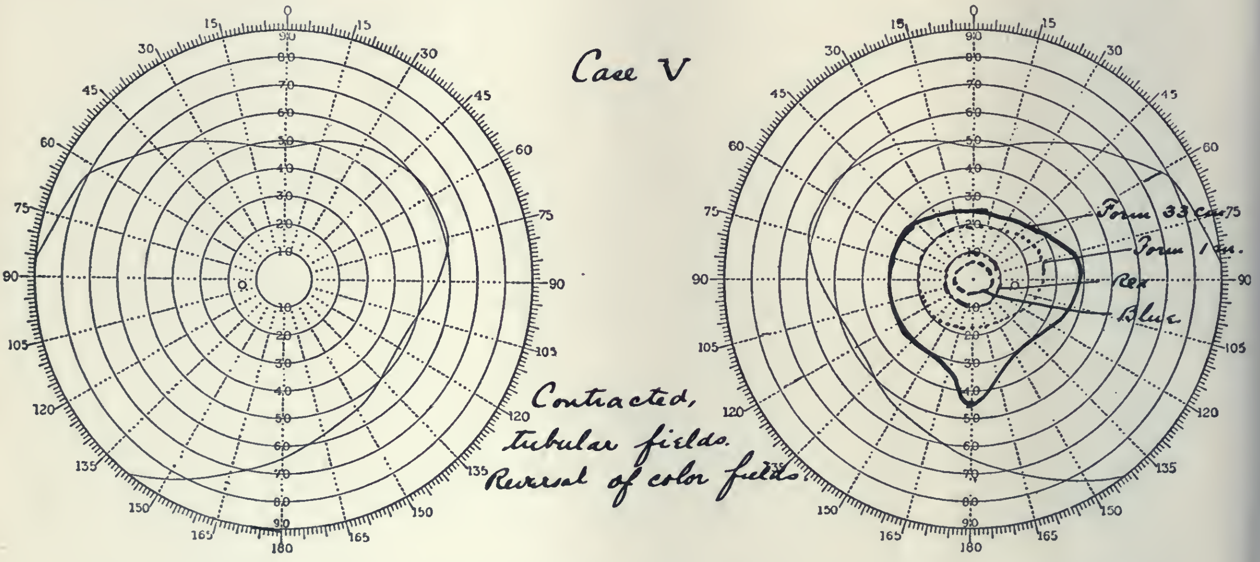


Case IV

Fields tubular
Have the same extent
up to 2 metres.
Red recognized before blue

Here, then, in a patient with grave hysteria, with convulsions, paralyses and contractures and hemianesthesia we have amblyopia, most marked on the anesthetic side, paresis of accommodation, and contracted, tubular fields. The patient remained in the hospital six weeks and showed a gradual improvement in the general condition; when discharged she was able to walk without assistance, the contractures of the arm were less marked, and she complained of less pain. No further eye examination was made.

CASE II.—A. H., a nervous child aged 10, came to the Eye Dispensary January 17, 1903, complaining of asthenopia after school work. The eye grounds were normal and a glass correcting a low hypermetropic astigmatism (O.D. $1^{s}2+0.25^{c}x90^{\circ}$ and O.S.$+1.25^{s}$) was ordered. With this, she had a vision of 8-9 in each eye. In May, 1903, she came with facial paralysis of the right side, which was the result of an abscess of the middle ear, following an attack of tonsillitis. There was keratitis of the right eye, due to exposure of the cornea, vision in O. D. was 6-9, in O.S. 6-7.5. The condition improved under treatment and the facial palsy gradually disappeared in the course of about eight weeks. One year later, June 7, 1904, she again appeared, and said that after a day of excitement in the country, from which she did not return until 12 o'clock at night, the pupil of the right eye suddenly dilated, and she was unable to see anything with the eye. The sight soon returned, but the pupil remained dilated. When closely questioned the child denied having used any drug in the eye. The condition had already existed, without change, for two weeks. O.D.V. was 6-22; O.S. 6-7.5 with O.D.; she was able to read only Ty 2D at 14 cm. with O.S. 0.50D at 14 cm. The pupil was dilated ad maximum, but responded to light and contracted an instillation of eserin, showing that atropin had not been used. The fields were contracted, and showed reversal for colors, and an annular ring scotoma. The corneal sensibility was diminished in the affected eye. Ophthalmoscopic examination showed clear media and entirely healthy eye grounds. The dilation of the pupil and paralysis of accommodation did not change and one month later she was sent to the Nervous Dispensary, where she was examined by Dr. Spiller, who found distinctly diminished sensation of touch, and pain on the right side of the face, right upper limb and right side of thorax. There was both inguinal and inframammary tenderness, most marked on the left side, and Dr. Spiller considered the condition hysteric. Soon afterward she ceased coming to the dispensary, but was sent for and examined last Saturday, October 14, 1905. The mother says that the pupil remained dilated for four months, and that on one occasion several months later, when the child was very much excited, the pupil had again dilated for about half an hour, but had been all right since then. The vision is now 6-0 in the right, and 6-5 in the left eye; Ty 0.50D can be read at 14 cm., the pupils are equal and respond promptly, and the visual fields are full. It will be noted that the eye affected was the one to which the child's attention had been originally directed by the facial paralysis and corneal inflammation.



Case V

Contracted, tubular fields. Reversal of color fields.

Case III.—G. A., aged 18, was examined in Dr. deSchweinitz' office, March 27, 1905. She came on account of dilation of the left pupil, and gave the following history: She was of a nervous temperament, had had long hours of work, and had had much trouble in her home life, during the previous year, so that she had left home. One year before she had an attack of diphtheria, but recovered completely without paralyses. Her general health had been poor, as the result also of an acute attack of appendicitis, and of constant toothache. The left upper incisor tooth had been removed by a dentist three weeks before, and almost immediately afterward she noticed that she saw very poorly with the left eye, and that the pupil was widely dilated. This condition had persisted unchanged. Examination showed O.D.V. 6-9, O.S.V. 6-22; with O.D. Ty 1D was read at 25 cm., no improvement with convex lens; with O.S. no type could be read, but with $+3.75^{s}$ Ty 50D was read at 33 cm. The right pupil was 4 mm. in diameter and responded promptly. The left pupil measured 9 mm. and showed no response to light or convergence, nor did it contract on instillation of eserin. No glass improved O.D. vision above 6-9. Shadow test of the left eye showed $+0.75^{s}_{2}+0.25^{c}\text{x}75^{\circ}$ with which vision was 6-12. There was no change in accommodation when the left eye fixed a near point during the skiascopic test and no improvement was noted in binocular vision (bar test), showing that the paralysis of accommodation and the mydriasis were complete. Ophthalmoscopic examination revealed clear media and healthy eye grounds. The fields were not contracted, either for form or color. The patient was referred to Dr. D. J. McCarthy for examination, and the latter reported no evidences of organic disease of the nervous system. There was distinct hypesthesia of the entire left half of the body to pain and temperature, and some tactile anesthesia of the sclera of the same side. The reflexes were exaggerated, and there was some iliac tenderness on the right side. Further questioning revealed the fact that she had had a number of fainting spells during the year, and three weeks before the pupil dilation she had had an attack of unconsciousness, after which she had been unable to feel the thrust of a pin in her left side. The diagnosis of hysteria was therefore probable, the ocular symptoms of reduced vision in both sides, most marked on the left, or anesthetic side, paresis of accommodation and mydriasis having followed suddenly upon the shock of the removal of the upper incisor tooth on the side of the most affected eye.

Case IV.—Mrs. M. C., aged 36, was referred to the University Dispensary by Dr. Kamerly of this city, on account of poor vision which could not be improved by glasses. This had lasted two years, and had followed a fright. Her family history revealed no history of neurosis, but she had always been nervous since childhood. She was married at 20, and had never been well afterward. Her menstrual periods were irregular and painful. Shortly after marriage she began to have "spells," in which she became deathly sick, had pains in the stomach, and headache, which were relieved after vomiting. These "spells" sometimes lasted a few hours, sometimes the entire day; they came usually about once a week, but lately had been more frequent. Two years ago she had one in which she heard voices. There was almost constant frontal headache with dizziness at times.

On examination vision was O.D. 6-45, O.S. 6-45. No type could be read at any distance. Ophthalmoscopically the media were clear, and the eye grounds showed no changes, except a slight blurring of the nerve edges, and a moderate retinochoroidal disturbance, not sufficient to account for her poor vision. There was some blepharospasm and photophobia, and a convergence insufficiency. The eyes were far out when fixing at 30 cm. and there was diplopia within this point. There was no anesthesia. either of the cornea or skin. The pupils were equal and were prompt in action. The visual fields were contracted within the 20° circle, and were tubular in type, remaining the same size, when tested up to four times the usual distance. There was also a reversal for color, red being recognized before blue.

She was referred to the Nervous Dispensary where she was examined by Dr. Spiller who reported: This patient is probably a case of hysteria. She has marked tenderness to pressure in almost all parts of the body, especially in the left inguinal and inframammary regions. The sense of smell was about normal, of taste a little uncertain. Salt and quinin were recognized, although not at once. The reflexes were equal and prompt in each side.

One week later vision was found to be reduced to 6-100 in each eye. Tincture of nux vomica was prescribed. Vision gradually improved and four months later the refraction was tested under mydriatic with $+1^{s}c+0.50^{c}{}_{2}90^{\circ}$ she had a vision of 8-15 in each eye. There is no record of a later visit.

Here we have amblyopia of the same amount in both eyes, blepharospasm, convergence insufficiency with diplopia, and tubular fields following a fright two years before examination.

In addition to these four cases there are short notes of another, Case V, which shows reduction of vision unaccounted for by ophthalmoscopic examination, in which other evidences of hysteria were not noted.

Case V.—Mrs. M. S., aged 45, was seen at the dispensary January 16, 1905, having been referred by Dr. Bernd of Chester. She was a mill hand, and gave the history of having been struck in the right eye by a piece of flying glass, in a trolley car accident, one year before. She complained of constant pain in the eyes and a gritty feeling in the lower conjunctival culdesac. Examination, however, showed no evidence of any foreign body or of any inflammation of the conjunctiva. The vision was only 6-30 in each eye, and could not be improved by pin-point test or by indifferent lenses. The pupils were equal and responded promptly. They dilated equally after cocain instillation, and the eye grounds were found to be perfectly healthy. The fields were contracted, as shown by the chart, that for form being narrower, when tested at one meter, than at 33 cm. The red circle was also outside the blue all around. A tentative diagnosis of hysteric amblyopia, with contracted tubular fields was made, but the patient did not return for further examination despite request by letter.

These cases illustrate the most common ocular complications of hysteria. It will be noted that all five were females, who are most liable to be affected. The youngest was 10, one 18, one 20, one 36 and one 45. The most common decade to be affected is the second 10 to 20 years. The first case was of a grave type of hysteria with convulsions, paralyses and contractures; the others were mild forms, in which the ocular symptoms were comparatively more prominent. In only one case, the first, was there a history of blindness. This was present in the state of stupor which followed the convulsive seizures. All five show pronounced reduction in visual acuity which was bilateral in every case, except in that of the child. In each case which showed cutaneous anesthesia (three) the most marked reduction was on the anesthetic side. This is the customary rule. In four the loss of sight was sudden and followed some unusual mental shock—in one an accident, in another a fright, in a third a surgical operation, and in the fourth, a child, a day of excitement. All the patients were of a distinctly neurotic type. In one case the amblyopia had been present for two years, in two for one year; one patient recovered in four months, and one was examined three weeks after its appearance. In no case were there any changes in the eye grounds to account for the loss of visual acuity.

Disturbance of accommodation was definitely determined in four cases, and was in the form of paralysis and not of spasm. In one of the cases (Case III) the accommodation power was no greater in binocular vision than in minocular vision (bar test), although this condition is supposed to indicate an organic condition, no further evidence of which was demonstrable.

There was unilateral dilation of the pupil in two cases (II and III). In one the mydriasis was overcome by the instillation of eserin and was therefore paralytic in type; in the other it was not affected by eserin, was consequently spastic in character. Although this has been a much disputed point, it is now known that both conditions may occur and are to be differentiated by this test.

The visual fields were contracted four times, and reversal of the color fields was noted in three. In only one (Case III) were the fields entirely normal. In all three contracted cases the type was typically tubular.

One patient complained of ocular pain and photophobia, and showed some blepharospasm; one had convergence insufficiency and three showed some tactile anesthesia of the cornea and conjunctiva.

BRAIN ABSCESS, FOLLOWING ACUTE OTITIS MEDIA. OPERATION. RECOVERY.[1]

BY
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The following case has several valuable features which make it seem worthy of being reported rather fully. Subdural abscesses following acute otitis media are of quite frequent occurrence, but abscesses in the brain substance of otitic origin usually follow a chronic rather than an acute middle-ear suppuration. I have observed both in my own cases and in cases reported by others, that many of the intracranial complications of acute suppuration of the middle ear, very frequently occur in cases in which the middle-ear inflammation has been quite mild, at least as regards the pain, scantiness of discharge and fever, and the patient may or may not have been confined to bed because of what has seemed to him or the parents "a simple gathering in the ear."

This case is such a one, *i.e.*, as regards the mildness of the local symptoms referred to the ear, while the later symptoms, probably after the brain infection occurred, made the boy seem decidedly sick, without, however, being definite enough at first to be sure of a localized new infection. It again emphasizes the necessity of always regarding a middle-ear suppuration as being in all cases, mild or severe, acute or chronic, fraught with possibilities of the gravest consequences.

E. F., male, aged 11, complained of pain of short duration in the left ear on February 4, 1905. Four days later the pain and tinnitus recurred, lasting for more than an hour. The next morning his appetite was poor, there was no earache but he remained home from school. On February 11, there was slight earache, the tinnitus continued, but the boy was not sufficiently sick to have a physician called until February 13, when Dr. A. C. Mercer was called

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[1] Read before the American Laryngological, Rhinological and Otological Society, Boston, June 5, 1905.

to see him. He was dressed and about the house, his only complaint being that of earache, severe at times but usually not so, and a blowing noise in the left ear, slight fever and no headache. I was asked by Dr. Mercer to see him the next day. He was lying on the couch dressed; said his ear ached somewhat, complained of the tinnitus and deafness of the left side. On examination the drumhead was found enormously swollen, bluish red and bulging into the canal; some tenderness in front of the ear but very slight on pressure over the mastoid. Temperature 100° F. Under cocain anesthesia I made a free incision through the posterosuperior segment of the drumhead. This was followed by a free flow of blood, and later a mucopurulent discharge. He was greatly relieved by this, and I did not see him again for nine days, though he was seen in the meantime by Dr. Mercer. The discharge was free for four days, when it ceased.

Dr. Mercer had been having Dr. W. H. May make blood-examinations in a number of cases of scarlet fever and measles, and comparing the result with the blood of his other patients, and in this way it happened that a blood-examination of this patient was made on February 20. The differential count showed polynuclears 89 percent, lymphocytes 10 percent, eosinophiles 1 percent, and an actual leukocytosis of 18,000. From February 14 to February 23 the boy complained very little, the pain in the ear having almost entirely ceased after the incision of the drumhead, and although he was ordered to bed he was dressed and about the house most of the time. Anorexia was very marked. Although at each visit Dr. Mercer took his pulse and temperature, there was no record made and consequently they are not available, but the temperature was usually from 100° F. to 101° F., on one occasion 103° F. The pulse varied from 100 to 120, but about February 20 it became slower; its character was good. During these nine days the most striking symptoms were the anorexia, listlessness, and absence of pain in or about the head or ear. He looked decidedly ill, but was not able to indicate any special seat of trouble, complaining however of the slight tinnitus.

My second visit was with Dr. Mercer on February 23, nine days after the previous visit; the patient was in bed; temperature normal, pulse 70; his only complaint being that "he felt sick all over." On examination the drum membrane was healed, no perforation, no redness, though it was quite opaque and lusterless, no bulging, no discharge. There was no tenderness whatever in front of the ear or on pressure, superficial or deep, over the mastoid. There was no indication of any pus in the middle ear or mastoid. He complained of no headache but was very quiet and listless. A few moments before we reached the house he had vomited; this being the first time this symptom had occurred, and because of this we considered the possibility of some intracranial complication, but concluded this to be improbable.

The pupils were normal in size and reacted normally. From February 23 to February 26, when I saw him next, he continued to grow more and more listless, the vomiting occurred several times a day, and the pulse dropped from 65 to 60. When Dr. Mercer and I saw him together on February 26 at 2 p.m., cerebration was distinctly slow; anorexia was marked, vomiting more frequent and once he cried out with headache, clapping his hands to the sides of his head on one occasion when he coughed. This was the only time throughout the whole sickness that he said his head ached, and this he did not localize. Dizziness was present, constipation not marked, temperature normal, pulse 54 and regular pupils sluggish though equal and reacting to light. The drum membrane looked almost normal, light reflex was present, luster had returned and the appearance was much better than at the previous examination three days before. No mastoid pain or tenderness or swelling either externally or in the posterosuperior wall of the canal. Kernig's sign was present. A diagnosis of brain or subdural abscess was made and we urged an immediate operation. This was consented to and he reached the Woman's and Children's Hospital at 5 p. m.

Blood count showed hemoglobin 90 percent, reds 3,760,000, whites 24,687. Urine, specific gravity 1,040, no albumin, no sugar, amorphous urates. Drs. Marlow and Locke examined him at the hospital, the former making an ophthalmoscopic examination, finding the discs normal, no optic neuritis. Both concurred in the diagnosis made and he was etherized at 6 p. m. An incision reaching from the tip of the mastoid, extending upward parallel with the insertion of the auricle and carried well forward in front was made. The antrum was entered and the mastoid cells completely removed from the tip to the anterior cells at the root of the zygoma. There was absolutely no inflammation in the mastoid. The lateral sinus was then exposed freely and from beneath the dura there was an escape of some serous exudate with which we thought we saw an occasional drop of pus mixed with blood, but finally concluded that we were mistaken in seeing any pus, the appearance being due to the reflection of light in the blood. The tympanic roof was next exposed and some of the bone together with a portion of the squama removed. The probe failed to reveal anywhere the presence of a subdural abscess. It was thought best not to explore the brain in the absence of any more definite focal symptoms, but await developments, especially in view of the pressure being removed through the escape of the serous exudate. The lateral sinus was apparently not affected. The wound was dressed in the usual way and the patient left the table at 8 o'clock in good condition.

During the night he vomited a round worm 5 inches in length and at the morning visit we found his symptoms had entirely changed for the better. Temperature 98° F., pulse 64, respirations 20, no vomiting, no headache or dizziness, and his mental condition was altogether clearer; in fact he was so bright in every way that the parents insisted that the worm had been the cause of the whole sickness. During the day the pulse varied from 64 to 88, temperature 98° F., respiration 16 to 24; no vomiting during the day but during the night he vomited once. The next morning, February 28, at 7:30, 36 hours after the operation he had a severe convulsion. The interne, Dr. Rosensteil described it as follows:—"When first seen the body was rigid, pupils equal, arms somewhat flexed, and thumbs turned in the palms. In a few minutes the left pupil dilated widely, and the right became very small. There was a fine tremor in the muscles of the right thigh and leg. The left leg was turned toward the right. The pupils then began to equalize in size, the body became less rigid and the first movement was in the left arm. The convulsion lasted about 15 minutes." At this time he was in a stuporous condition, respirations irregular, pulse 45-55, right pupil contracted and fixed. No strabismus, deviation, or oculomotor paralysis. Deep reflexes, right side exaggerated, left side normal. Patellar reflex exaggerated on the right side. Kernig's sign was present, and Babinski's reflex present.

He was given ether, and while under ether the right pupil became contracted to pinhead size and left dilated almost to limit. I was assisted in the operation by Drs. A. C. Mercer, Locke, Breese, and Rosensteil. An incision at right angles to the former one extending posteriorly toward the occiput was made. The bone over the sigmoid sinus which had been removed in the greater part of its length in the first operation. was now completely removed in its full extent, and in doing so the diploe bled most profusely and it was with the greatest difficulty the bleeding could be arrested, and just as it was being controlled a fresh hemorrhage from the sigmoid sinus occurred and almost proved fatal. The patient became exsanguinated and pulseless. An intravenous transfusion of 1,000. cc. normal saline solution was given in the vein of the right arm, the pulse returned and the operation was resumed. Firm pressure with a gauze pad was maintained over the sinus during the rest of the operation, the pad not being removed for five days.

The squamous portion of the temporal bone was now freely exposed. The temporal ridge, together with a circular piece of bone of the squama three-fourths of an inch in diameter was removed with forceps. The dura looked somewhat pale and bulged slightly. An incision was made through the dura and a probe pointed director pushed into the temporosphenoidal lobe. This was immediately followed by a flow of clear fluid, evidently cerebrospinal, and this by a profuse flow of grayish-green pus, quite thick and without odor, and about two ounces in quantity. Artery forceps was introduced into the abscess cavity, distending it gently until the abscess was emptied, and the cavity which was about two inches in depth was packed with selvage edge iodoform gauze. The external wound was packed with iodoform gauze, care being taken to maintain pressure over the lateral sinus. The patient was taken from the operating-room in a precarious condition without much hope of his living more than a few hours. Saline enemas were ordered and these were continued for ten days (every four to six hours) and to them much of his rapid recovery is attributed. At 5 p. m. the day of the operation temperature was 99°, pulse 136 and respiration 20.

March 1, temperature varied from 99.2° F. to 100° F., pulse 96 to 112, respiration 18. Slept well. No headache, dizziness or vomiting. The pus from the brain abscess reported to be streptococcic. March 2. Abscess cavity dressed, and a large quantity of pus came with the packing. From this time on, the abscess in the brain was dressed every second day, selvage edged iodoform gauze being used. The abscess was syringed but once, at the time of the first dressing when the quantity of pus was very great. The pressure pad over the lateral sinus was removed on the fifth day and there was no further hemorrhage. On March 28, 30 days from the time of operation, the wound in the brain had closed, and the mastoid wound was closed one month later, all dressings being discontinued two months from the time of operation. The patient sat up on the thirty-fifth day and walked out doors on the forty-sixth, leaving the hospital at the end of two months from the time of admission.

The temperature after the first two days never went above 100° F. and never lower than 98° F. and remained practically normal after the first two weeks. The pulse for a few days, as a result of the tremendous loss of blood, was about 120 to 140, but after the first week it varied from 100 to 80. Respirations 18 to 22. There was no headache, dizziness, or vomiting at any time following the operation.

At time of leaving the hospital, May 1, the blood count showed hemoglobin 90 percent, reds 4,240,000 and whites 11,250. He had gained greatly in weight, was bright mentally, and barring a slight limp in the right leg was perfectly well. This limp gradually lessened so that it was gone three weeks later. On May 18 his hearing for the watch was on the right side 46 inches, left (affected ear) 25 inches.

There are several interesting features in this case. In the beginning there was comparatively slight earache for the first nine days of the otitis media, there was unusual bulging of the drumhead, complete relief from earache followed incision, and the discharge ceased at the end of four days with a healing of the drumhead at the end of the ninth day, possibly earlier.

From this time there was almost no complaint regarding the ear or head, but a marked anorexia, listlessness, change in disposition, and an absence of definite symptoms pointing to a brain complication, until vomiting, dizziness and a slow pulse occurred ten days from the time of incision of drumhead. Headache was continuously absent, excepting once. There were no mastoid symptoms at any time. The blood count six days before the operation (first) showed a marked leukocytosis and on day of operation this was very decided.

Following the first operation for 24 hours, there seemed to be a marked relief of all symptoms, attributed by the parents to the vomiting of a long round worm, by us to the relief of pressure afforded by exposing the dura and allowing the escape of an appreciable quantity of serum. Thirty-six hours from the time of this operation, however, a sudden convulsion, marked lowering of pulse, pupil changes, vomiting, and beginning stupor, showed the diseased area had not been reached, and that a rupture into one of the ventricles had occurred. This latter supposition was apparently verified by the escape of first, clear cerebrospinal fluid, followed immediately by thick pus from the abscess cavity when this latter was reached. The success of the operation was greatly handicapped by the venous hemorrhage, first from the diploe and then from the sigmoid sinus, so that the patient almost died from hemorrhage on the table before the abscess was entered. Only venous saline transfusion saved him then, and the saline enemas were of great value later.

His recovery was rapid and without incident. The loss of bone was very great and the extent of dura exposed very large, and as has been frequently observed in other cases, granulations and healing over the dura was very rapid. The abscess was in the temporosphenoidal lobe, was apparently as large as an egg, holding at least two ounces of pus, and the infection was streptococcic.

The mastoid was entirely uninvolved, infection reaching the brain probably along the sheath of the lymphatics or veins, passing through the tegmen tympani.

At the present date, October 24, 1905, eight months from time of operation, the boy is in perfect health, is unusually bright mentally, and the hearing in the affected ear is now equal to that on the right side.

THE PELVIC GIRDLE FOR PTOSIS OF THE ABDOMINAL VISCERA. SUGGESTION FOR ITS USE IN TUBERCULOSIS, ETC.

BY
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For many years I have experimented on various orthopedic measures for the relief of the distressing symptoms which accompany the displacement of the various organs of the abdominal viscera. I was especially interested in devising means of relief for the condition known eponymicly by the name of the man who over 20 years ago first gave to the scientific world a graphic description of a sympton-complex, which since has become a classic; I refer to Glénard's disease, or enteroptosis. The evolutionary progress in my search I can divide into three distinct periods. First, the "truss" period. I have tried all kinds of trusses by means of which I have endeavored to lift the ptosed organs, and especially the right kidney, which as a rule wanders into the wrong place. I have used trusses of all kinds and descriptions; of wood and metal, hollow and filled, round and oval, heartshaped, and of the shape of the moon in all its phases. In only exceptional cases, did the truss afford any relief. One after another was given up in disgust, and since that time, the sight of a kidney truss brings up hosts, and in some cases ghosts of women, who so far as I was concerned, reversed the usual and customary civic procedure: they who sued me first for support, sued me next for breach of promise. The truss period is my nightmare.

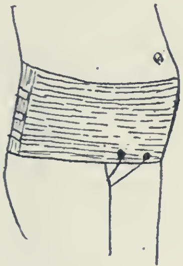

Fig 1

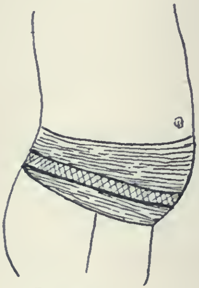

Fig III

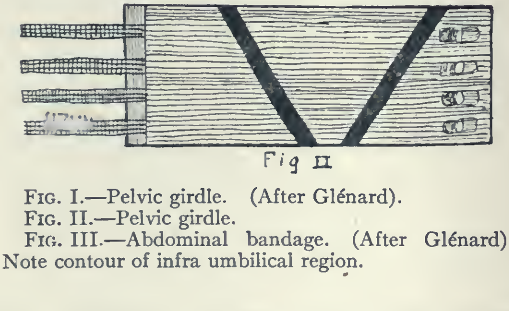

Fig II

FIG. I.—Pelvic girdle. (After Glénard).
FIG. II.—Pelvic girdle.
FIG. III.—Abdominal bandage. (After Glénard). Note contour of infra umbilical region.

The second period was that of the "abdominal bandage." This proved to be a more serviceable orthopedic measure. The various makes of abdominal bandages are as great and as wide as the fancy of the manufacturers. The underlying principle of all abdominal bandages is, that the part which comes in contact with the anterior abdominal wall below the umbilicus is made sufficiently wide and concave to adjust itself to the convexity of that portion of the anatomy. The lateral tapering bands which pass over the crest of the ilium, cross at the back, and are fastened at a level higher than the anterior point of support. The direction of the axis is from below upward.

There are distinct indications for the use of the abdominal bandage, in its multifarious shapes: In the pendulous abdomen, whether due to an abnormal accumulation of adipose tissue, or to the flabby and dangling atonic abdominal walls seen in some multipara; in dilation of the stomach; as a prophylactic in some cases of pregnancy accompanied by a great deal of distress from weight and pressure; as a palliative measure in large benign tumors in the abdominal cavity; and, as an after-treatment in all laparotomies. In all these conditions the indications are, to lift up the pendulous part, and thereby either to relieve the sensations of dragging and fatigue, or to protect the abdominal wall from injury. In these cases the abdominal bandage answers its purpose admirably, namely, that of a sling.

In cases of enteroptosis, however, the abdominal bandage is almost useless. In 90 percent of all cases of Glénard's disease, the abdomen is small and flat, and the abdominal walls thin. In a number of cases the abdomen is retracted. Moreover, the more emaciated the patients are, the more severe and annoying are their symptoms. It is obvious that the abdominal bandage with its concave shape can be of no use when there is nothing to lift. It is also evident that the symptoms of pressure, weight, fulness, and discomfort which are experienced alike by one who suffers from an accumulation of adipose tissue, and by one whose transverse colon has tumbled down, are not due to the same cause. In the case of an enlarged abdomen it is due to the enlarged bulk and increased weight. In the cases of ptosed organs, the bulk and weight remain either the same, or are even diminished. The symptoms, therefore, in the latter case are due, not to the enlarged bulk and increased weight, but either to impaired circulation, pressure upon the nerves, or to faulty metabolism due to the displaced organ or organs impinging upon other organs, or interfering with their function. It is evident, therefore, that in order to relieve this condition, we must endeavor either to replace the organs into their natural position, or at least to liberate them from their abnormal position.

In order that we may the better understand the pathology of enteroptosis, we will pass in review some of the anatomic points relating to the abdominal viscera: The liver and spleen occupy the uppermost place in the abdomen; they rest partly on the stomach, and partly on the hepatic and splenic flexures of the large intestines; the stomach rests upon the transverse colon; the colon rests upon the small intestine; the small intestine rests in a funnel-shaped enclosure formed by the lumbar vertebras behind, the anterior wall in front and the cecum and sigmoid below. The intestine is, therefore, the base of the whole edifice. All these organs are kept in place in the following manner: By the ligaments, peritoneal bands, by the abdominal wall, by their own volume and by an inherent tendency to retain their normal relation. The fluctuations in the volume of intestines within their physiologic limits disturbs, in no way, the equilibrium of the other organs, thanks to the ingenious automatic mechanism of the tonicity of the abdominal walls and the intraintestinal tension. When the caliber of the intestine is increased, the abdominal tension also increases, but the abdominal walls, distending in their turn, equalize the increased volume of the intestine. When the volume of the intestine diminishes, here, too, the tonicity of the abdominal parietes helps to decrease the capacity of the abdominal cavity and to maintain the relative positions of the various organs. Even when the tonicity of the abdominal walls is not sufficient to exert pressure upon the abdominal viscera, the intraintestinal pressure alone is sufficient to keep the relative position of the organs *in situ*. But when the caliber of the intestines is diminished, and the intraintestinal pressure is *nil*, which is the case when the intestine is in an atonic condition and devoid of gas, then the intestines diminish in size, sag down, and "shoot the chutes;" soon after the kidney follows suit, the liver joins in the downfall, the spleen is degraded, and the diaphragm and the heart above it become involved in the wartug. One who has had experience in abdominal palpation knows that in all cases of enteroptosis the caliber of the large intestine is greatly reduced —the cecum is not larger than a hen's egg, the transverse colon is of the size of the index finger, and the sigmoid is not larger than a lead pencil. Here we deal with the condition which is the reverse of that of tympanites: There is an insufficient, or entire absence of gas in the intestine. The reduction in size cannot be ascribed to a spasmodic contraction of the intestine, for the condition may last indefinitely without the patient ever having experienced a single attack of colic.

From the foregoing, it becomes evident that in order to relieve the symptoms caused by the descent of the organs, it is not sufficient to raise the abdominal walls, but it is necessary to exert a pressure upon the most dependent portions of the abdomen, and at the same time to elevate from before backward, and from below upward, so as to squeeze out and up all the ptosed organs, and that this double indication must be met, no matter whether the abdomen is large or small, pendulous, or retracted.

For almost a decade I have been endeavoring to weld the science of mechanics, anatomy, and tailoring from the combination of which the ideal abdominal bandage was to come. Dr. Gallant's straight-front corset, and Dr. Rose's adhesive strips claimed my attention for a considerable time. Both methods are ingenious; both do exactly what their authors claim for them. But Dr. Gallant's method proved serviceable in but few cases. In the majority of cases, I could not make the kidney stay above the waist line. Dr. Rose's method is theoretically correct and practically serviceable to some extent, but its use is objectionable. The adhesive strips are unpleasant to wear; they get loose in a day or two, and must be changed, which is a somewhat painful performance. Although I have endeavored to follow minutely the directions given by Dr. Gallant and Dr. Rose, I admit that my disappointment with the method of Dr. Gallant may be due to my lack of skill in lacing the corset, which Dr. Gallant advises that the physician should do himself, and there is probably some skill also required in the application of Dr. Rose's adhesive strips, which I may not possess.

During the last year I have used a very simple orthopedic measure which has given a great deal of satisfaction. This begins the third, and I hope the last period, that of the pelvic girdle.

The pelvic girdle differs from the abdominal bandage in the following points: Instead of being concave in front, with both ends tapering, the girdle is made of an oblong strip of elastic material of sufficient length to encircle the pelvis, and five or six inches wide. The girdle is applied in such a way that the lower border is in contact with the pubic bone, both extremities are passed horizontally above the trochanters, and are fastened behind over the sacral region by means of three or four bands. The elasticity of the material, the ease with which the girdle is fitted by the patient himself, the freedom from chafing and the pressure from before backward and from below upward which it exerts are points in its favor. (Footnote B.)

I had the honor of exhibiting a sample of my design at the last meeting of the Colorado State Medical Association, held at Colorado Springs. I am gratified to know that many of the prominent physicians in Denver, and throughout the State, have found the pelvic girdle very satisfactory in all cases of gastroptosis, and many of them have personally, and by letter, expressed to me their favorable opinion.

Since I began to prescribe the pelvic girdle, I have used it in more than 50 cases. The following brief summary of cases illustrates the result obtained from its use.

CASE I.—Mr. W. L. D., engineer. The patient is very nervous. Attacks of biliousness occur once in two or three months and last for a few days. Of late the attacks are more frequent. He is very easily fatigued. I prescribed the pelvic girdle. A communication from him from Goldfield, Nevada, states that he has had a slight attack of biliousness and this but once. He is working very hard, but feels equal to the task.

CASE II.—Mrs. M. D., female, aged 37. On account of gonorrheal infection the patient had both ovaries removed when 21 years old. She has had stomach and bowel trouble for seven years. Her appetite is good. Bowels are constipated. She is very nervous. Her right kidney is ptosed. The pelvic girdle was prescribed and she has been doing well since.

CASE III.—Mrs. A. R. S., aged 63, was referred by Dr. Zederbaum. For 17 years the patient has suffered from stomach trouble. She has attacks of severe pain. Gastroptosis and nephroptosis are present. I prescribed the pelvic girdle about three weeks ago, but she returned to my office complaining that she felt worse. I found that she had put on the pelvic girdle like an abdominal bandage, over the crests of the ilium, and thereby aggravated her condition. She feels a great deal better since she wears it in the right way.

CASE IV.—Miss M. J. P., aged 28, has been a gastropath for many years. She has a sensation of heaviness after meals, her appetite is good. She is constipated, and belches up food after each meal. Pulse is 100, temperature taken for many days in the afternoon 99° to 100°. Examination of the heart and lungs is negative. Ptosis of the right kidney, stomach, and bowels is present. She was treated by faradic electricity and pelvic girdle. Her condition has improved, she is gaining weight, and there is no rise of temperature.

CASE V.—Mrs. B., referred by Dr. Barney, has been under my observation for four years. She has attacks of severe pain in the abdomen. Hematemesis occurred once. Diagnosis ulcer of the stomach, and movable kidney. She has gone through a regular ulcer cure. She has given birth to a child and during pregnancy was better than ever in her life. Six months after delivery her trouble returned. I prescribed the pelvic girdle; and regulated the diet. She is doing very well.

CASE VI.—I. P., aged 40, had several attacks of indigestion characterized by loss of appetite, constipation, and pain in the epigastric region. Two years ago the attacks were so severe that he was kept at St. Luke's Hospital for two weeks. In October, 1905, right nephroptosis was found. I prescribed the pelvic girdle. He feels better, but the treatment has been instituted too recently to make any conclusions.

Case VII.—Mrs. L., referred by Dr. Loomis of Colorado Springs. She has symptoms of dyspepsia; gas in the stomach and intestines; a pendulous abdomen. The pelvic girdle was prescribed with resulting great improvement.

Case VIII.—Dr. G. suffers from asthmatic attacks daily; between the attacks he has an annoying cough. I could not ascertain whether there was ptosis of the abdominal viscera. I prescribed the pelvic girdle, however, and he reported a great deal of improvement in the cough. He could walk with greater ease. He left Denver a few months ago, and I have not heard from him since.

Case IX.—Mrs. E. M., referred by Dr. Swan of Colorado Springs. She suffers frequently from acute attacks of gastritis, vomiting, and bloating lasting for about ten days at a time. She is very much emaciated. The stomach and kidney are ptosed. I prescribed rest in bed, tonics, and the girdle. She is doing well, and has gained 20 pounds.

Case X.—Mrs. F., referred by Dr. Mann. She has had dyspeptic symptoms for many years, and suffers greatly from loss of strength and a constant feeling of fatigue. Her right kidney and stomach are ptosed. The pelvic girdle was prescribed and she left Denver in an improved condition.

Case XI.—Mrs. C. M., referred by Dr. Mayhew of Colorado Springs. She suffers from pain in the intestines; and a great deal of gas. The abdominal organs are not ptosed. The pelvic girdle resulted in a great improvement.

Case XII.—Mrs. S., aged 26, referred by Dr. Wetherill. The patient has had dyspeptic trouble for many years. Her bowels are regular. She had a ptosed right kidney which Dr. Wetherill anchored. Her general condition was markedly improved. I advised the pelvic girdle on general principles and she is doing fairly well.

Case XIII.—Mrs. M., referred by Dr. Wetherill. She was operated upon for uterine polypus and had one ovary removed. She suffers from a dragging sensation, and her right kidney is ptosed. The pelvic girdle relieved her a great deal.

Case XIV.—Mrs. G., referred by Dr. Gildea of Colorado Springs. She suffers from pulmonary tuberculosis, vomiting, and other symptoms. The right kidney and stomach are ptosed. The pelvic girdle afforded considerable relief, especially so far as walking is concerned.

Case XV.—Mrs. D., stenographer, referred by Dr. Mann. She has dyspeptic symptoms, and a great deal of gas in the intestines. Her appetite is good; bowels are irregular. She is very nervous and has right nephroptosis. Prescribed a pelvic girdle and she is doing well.

Case XVI.—Mrs. M., aged 50. Referred by Dr. Ella Mead of Greeley. She suffers from indigestion, loss of strength, and attacks of pain in the epigastric region. She cannot walk ten steps on account of distress and dragging. Diagnosis: Gallstone, was confirmed by Dr. Lyman. Prescribed the pelvic girdle. She improved rapidly. She can walk without distress. Later prescribed probilin. Dr. Mead writes me that the patient, who is now residing in California, sent her a two-faceted gallstone which she passed.

In reviewing the foregoing cases, I find that I have used the pelvic girdle for gastroptosis, nephroptosis, enteroptosis, and when two or all of these conditions existed simultaneously. I have also considered as an indication for its use, certain cases in which an operation of nephrorrhaphy, has been performed, and also for the purpose of relieving an annoying cough.

I do not intend to use the pelvic girdle as a specific in gastric cancer, nor am I ready to recommend it as a remedy for locomotor ataxia. The indications I have enumerated are based upon a train of reasoning which I wish to present.

That the pelvic girdle is indicated in all cases of ptosis of the abdominal viscera does not need further argument. The trouble for the last 20 years has not been the question as to whether a support is indicated as a remedial measure in ptosis, but what kind of a support should be used that would really support. The indications, in cases in which the kidney has been anchored, rested upon the following facts: Surgeons will corroborate my statement that a certain percentage of cases of nephroptosis are not benefited by operation. The annoying symptoms continue, in a somewhat mitigated form, and the surgeon is credited with an unsuccessful operation. The persistence of the symptoms has been ingeniously explained by an automatic "pain habit," *i. e.*, the nerves are so used to experience the sensation of pain that they are loath to give it up, even after the cause has been removed. Maybe there is a grain of truth in such a statement, but it savors of metaphysics, which I rather enjoy in questions pertaining to religion, philosophy, and abstract psychology, but shun and avoid whenever I deal in matters medical. The fact is that the surgeon has done his duty. The kidney was *displaced*, and the indication was that it must be *replaced*, which the surgeon did. But whenever the kidney is displaced, some other visceral organ or organs are likewise displaced, either in consequence of, or as cause of this condition. By anchoring the kidney, only *one* of the several pathologic conditions has been rectified. Suppose for a moment that the stomach was the primary organ that fell from grace, and that through such bad company, the kidney left its lofty abode, and went into nether regions. By returning the kidney to its dignified habitat, the stomach was in no way benefited. It is obvious, therefore, that in cases in which the annoying symptoms continue, if due to the existence of other ptosed organs, that a pelvic girdle should be advised.

I would suggest to surgeons that all patients with nephroptosis, before undergoing an operation, should be examined for ptosis of other organs of the abdominal viscera.

The idea that cough may be relieved by orthopedic measures, was suggested to me by the use of the elastic bandage in whoopingcough, in which I am informed it is very efficacious. I do not know whether any scientific reason has been advanced for the use of the bandage in whoopingcough. So far as I know it was used empirically. I reasoned that in the majority of cases in which there is a chronic cough, there is also emaciation, and where there is emaciation, there is also ptosis of some of the organs of the viscera. I should like to see the use of the pelvic girdle experimented upon in cases of asthma, bronchitis, and pulmonary tuberculosis. It seems to me that the relief which the girdle will afford by freeing the diaphragm from the weight of the viscera should have a beneficial effect. (Footnote A.)

I wish to make a distinction between the terms "replacing" a ptosed organ, and "supporting" a ptosed organ. The kidney truss and the straight-front corset aimed at *replacing* the kidney, and in my experience, failed. The pelvic girdle, on the other hand, modestly claims to be able only to *support* the ptosed organs. We relieve patients in various ways. An abdominal wall burdened with adipose tissue can be relieved of its weight either by a method which will reduce the production of fat in the body, or by an abdominal bandage. In the first case you remove the primary cause, the fat. In the second case, you remove the secondary cause, the *weight*. By anchoring a kidney you remove the primary cause by replacing the organ into its natural nest. By employing a pelvic girdle you remove the secondary cause, the weight. For, the annoying symptoms which accompany ptosed organs are not due to the vacuum which was created by the organ when it vacated its original domicile, nor is it due to the mere pressure of the organs in abnormal surroundings. In other words, the symptoms are not due to pressure exerted by the weight of the kidney upon organs immediately or remotely *under* its gravitation influence, but on the contrary, they are due to the constant pull which the kidney exerts upon all organs lying *above* it, and to which it is attached. This is not metaphysics, but good, honest physics.

One can and ought to ascertain before ordering a pelvic girdle whether it will be of use. The test is simple and can be applied by every practitioner. Stand behind the patient, and with both hands placed over the hips, lift with both palms the lower part of the abdomen, exerting at the same time pressure from below backward. The patient who needs a pelvic girdle will experience at once a sensation of relief from weight, pressure, fulness, dragging, and discomfort. The test is applicable to both fat and lean abdomens.

Many of my patients after having worn the pelvic girdle for the first few days, declare that they have not felt such freedom from dragging and pressure for years. An expression that was used by several patients, was that they feel as if they "had put on wings."

Foot Note. A.

A. Dr. Sheldon in discussing my paper at the Colorado State Medical Society, gave the following explanation for stomach symptoms and cough caused by ptosis of the abdominal organs: "When it is considered that the duedenum passes over the aorta and under the superior mesenteric vessels, we can readily see how prolapse of the intestine will constrict the duodenum and prevent complete drainage of the stomach. This in all probability is responsible for the stomach toxemia that will explain obscure nervous and perhaps cough symptoms. The elevation of the intestines by means of the pelvic girdle relaxes the superior mesenteric vessels and relieves the stenosis of the duodenum, which removes the cause of the toxemia.

Foot Note. B.

B. Dr. Franz Glénard was kind enough to send me a sample of a pelvic girdle, which he designed, of which the following is a description:

The elastic band is made of three distinct zones, or strips woven together, one above the other, differing from the other in width, and rigidity. The width of each zone is fixed. For a girdle 14 cms. wide, the inferior zone the widest and most rigid, is 8 cms. wide; the middle zone is 4 cm wide, and the superior zone is 2 cm, wide. For a girdle 16 cms. wide, the zones are as follows: Eight, five, and three He has adopted the minimum of 8 cm for the inferior zone, basing his conclusions upon experiments conducted upon the expansibility of the linea alba. Glénard has determined the exact force of each zone of the lower half of the abdomen, upon 12 subjects, six men and six women, and determined to what degree of constrictions it was necessary and sufficient to get the minimum effect of utility. The force of elasticity was measured by a dynamometer, which indicated the weight necessary to stretch a certain length. It was found that in order to stretch 50 percent of the superior zone, it was necessary to use 0.750 kilo; middle zone 3.75, lower zone 5.2.

The fastening of the girdle is done in front in the medium line by the aid of the most practical and expeditious method used nowadays in corsets and gloves, called fasteners, or snap buttons.

In order to adjust the girdle, which is necessary to do but once for each subject, without the necessity of having each girdle made to order: The posterior extremities of the girdle are fastened in their upper half, by means of elastic bands. The adjustment of the lower half of the girdle is made by means of lacing, and in order to keep the lacing from giving, there is placed a clamp upon the lower rows, which thereby blocks the laces and prevents them from getting loose.

SEVERE INJURY TO THE LEFT ORBITAL REGION PRESENTING PARALYSIS OF SEVERAL CRANIAL NERVES.[1]

BY
JOHN H. W. RHEIN, M.D., and SAMUEL D. RISLEY, M.D.,
of Philadelphia.

The patient, a woman of 50, was admitted to the St. Agnes Hospital on July 16, 1904, having been knocked down by a hawser which snapped under great strain, flying back and striking the patient on the left side of the face, the left arm, and the chest.

Upon admission to the hospital she was bleeding profusely from the nose; the left side of the face was swollen and severely contused; the eye-lid was edematous; and there were intense subconjunctival hemorrhages. Dr. Nathan Ward diagnosed a fracture of the nasal bones.

Two weeks later an abscess formed in the tissues around the orbit, probably involving the orbit also, and evacuated itself externally. A gradual amelioration of the inflammatory processes followed. From the beginning, however, she suffered from pain over the entire left side of the face. I did not see her until about four weeks after the accident, when she presented the following condition.

There was a slight ptosis of the left eye-lid. She was unable to lift the eye-lid above the upper margin of the pupil. All the movements of the eye-ball were possible except in the outward direction. She could not move the eyeball outward quite to the median line. She closed both eye-lids equally well. In repose there was a drooping of the left side of the face around the mouth, and the nasolabial fold was less marked on the left side. When she smiled there was some weakness observed in the levator labii superioris et alaquæ nasæ. There was no loss of power in the orbicularis oris nor in the forehead muscles. A slight quantitative lowering of the faradic irritability was observed in the muscles around the mouth, but deR. were absent. The pupil reacted in accommodation, but not to light.

At a previous examination by Dr. H. A. Shute he found that the external rectus was paralyzed completely, but that the other extrinsic muscles of the eye were entirely unimpaired. There was a thin opacity of the superficial cornea in the left eye. The ophthalmoscope showed no change in either eye. The vision in the right eye was $\frac{5}{5}$, and in the left eye $\frac{5}{12}$, which improved to $\frac{5}{6}$ as the corneal opacity cleared. There was much epiphora of the left eye which became worse in the autumn of 1904, when mucus could be expressed from the tearsac. There was great tenderness in the region of the left tearsac at all times, and a fracture of the orbital wall in this region was suspected. An attempt to pass a probe (Bowman No. 4) through the tear duct was unsuccessful, owing to what seemed to be a bony obstruction. Her fields, taken in September, 1904, showed no change in form or color.

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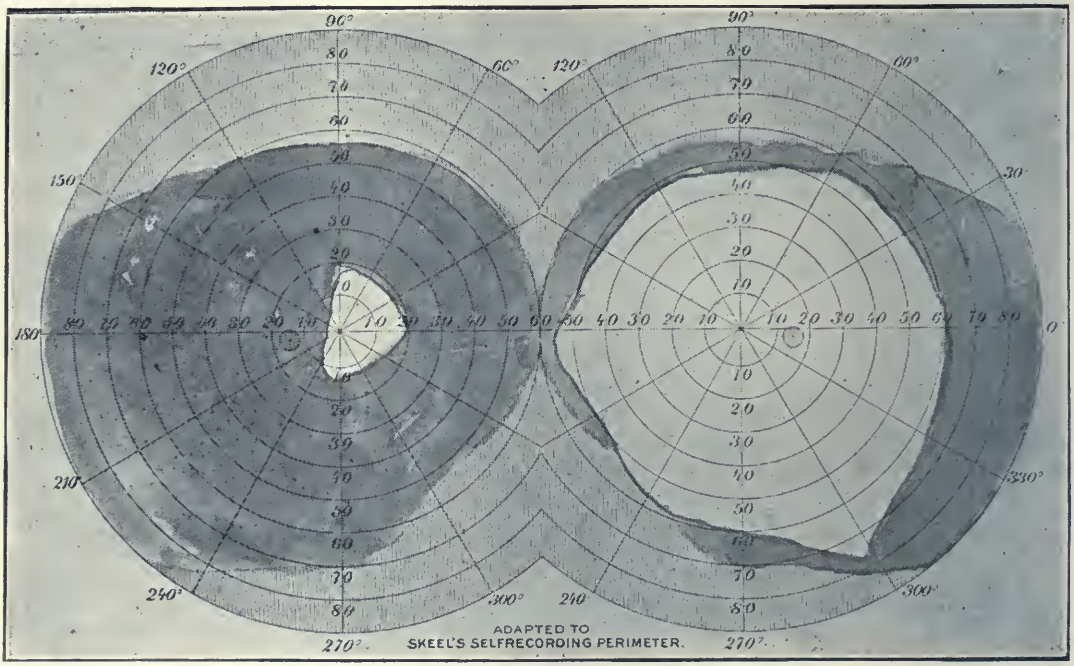
[1] The case was presented before the Philadelphia Neurological Society, December 21, 1905.

When examined again in April, 1905, her condition was much aggravated. The facial muscles on the left side around the mouth still moved less freely than on the right side. The left side of the mouth drooped, and the left nasolabial fold was less marked than the right. The forehead muscles were moved equally well on both sides, and the ptosis had improved. She closed both eye-lids perfectly and equally well. The tongue was protruded straight. There was some impairment of sensation, described as numbness, when tested with the pinpoint, over the left side of the face, and limited to the median line. In some places there was hyperesthesia, and she complained of a scalding sensation under the skin. The arm-jerks were present, and the knee-jerks equal and normal. The grasps were fairly strong and equal on both sides. The station was good.



Dr. Samuel D. Risley examined the patient in April, 1905, with great care, and will discuss later the results of his examination in detail. He found a paralysis of the external rectus, superior rectus and superior oblique. There was a complete unilateral left hemianopsia, *i.e.*, the nasal half of the retina was blind, and the nasal field was much contracted. The macula was included in the scotoma. The left nerve head was paler than on the right side, but no marked change was seen ophthalmoscopicly. Wernicke's hemiopic pupillary inaction was absent. He did not observe any ptosis, although there was, he stated, an apparent dropping of the upper eye-lid due, in his judgment, to impaired motion in the left frontalis muscle.

The paralysis of the external rectus indicates involvement of the sixth nerve; the paralysis of the inferior oblique and superior rectus, involvement of the third nerve; and of the superior oblique, the fourth nerve. If the paleness of the optic nerve indicates degeneration, then the second nerve is also diseased. The facial nerve is also implicated, as there is weakness of the muscles around the mouth. The numbness and hypesthesia show some disturbance of the fifth nerve also.

There is, then, in this case, paralysis in the distribution of the fourth, fifth, sixth and seventh nerves, and of some branches of the third nerve. This must be due to a cause acting upon the nerves after they have left the brain, as it is inconceivable to explain the symptoms by a central lesion. What cause could act in common upon six cranial nerves?

A fracture of the floor of the orbit, involving the lesser and greater wings of the sphenoid bone on a plane with the sphenoidal fissure and the foramen rotunda and ovale, would explain an injury to the third, fourth, the frontal division of the fifth, and the sixth nerves as they enter the orbit through the sphenoidal fissure, and an injury to the second and third divisions of the fifth nerve as they enter the foramen rotunda and ovale.

The facial palsy is probably peripheral, resulting from an injury to the branches of the nerve caused by the blow from the hawser.

The condition of the optic nerve is the most difficult to explain. Unilateral hemianopsia can only be due to a pressure or disease on one side of the chiasm, or an injury to the nerve itself. If, in this case, it is due to pressure on the optic nerve within the orbit, as seems probable, the presence of a light reflex on the blind retina is hard to explain. If the hemianopsia were bilateral and the Wernicke pupillary inaction was absent, we naturally would look to the cortex for the lesion. But no cortical lesion can give a one-sided hemianopsia.

The progressive character of the paralysis is also an indication of the existence of a peripheral cause, which is probably still in operation, as the symptoms are progressive. The paralysis of the iris present at the first examination was probably due to involvement of the ciliary ganglion in the orbit, and the improvement in the iris reflex to a lessening of pressure, as a probable inflammatory exudate was observed.

Dr. Francis R. Packard examined the patient on October 19, 1905, and sent me the following report.

The patient only hears the watch at a distance of 5 cm. from the right ear, and 2 cm. from the left ear. Her hearing for the tuning-forks, both by air and bone conduction, is very much diminished. Both membrana tympani show about equal amount of catarrhal change, being fibrous, very lustrous and much retracted. There is no scar, perforation, or other evidence of traumatism. There is certainly some lack of sound perception, due to change in the labyrinth or auditory nerve, but it is about equally present on both sides, and therefore is not (in his opinion) of traumatic origin.

Dr. Packard believed that, while it was possible that the auditory nerve was involved (particularly on the side in which there was facial palsy) the impaired hearing was more likely due to the catarrhal change in the ear, inasmuch as she heard with as much difficulty on one side as on the other.

Discussion:—Dr. Samuel D. Risley.—The ocular symptoms presented in the case were interesting in many respects as pointed out by Dr. Rhein, but especially so when viewed from the standpoint of localization. With but one, possibly two exceptions, the entire symptom-complex may be accounted for by the injury to the orbital walls and periorbital region.

When seen by him on April 6, 1905, the following conditions were present: The woman was suffering from left hemicrania, and in addition was much distressed by general nervousness and visual disturbance. The head was rotated strongly to the left and tilted backward, apparently due to an effort to escape diplopia. In the right eye $V=\frac{6}{10}$. There was no disturbance of motility, the iris reacted promptly to light and shade; there was no evidence of optic nerve disease. There was present, however, a strong secondary convergence and in addition some narrowing of the field of vision for form, due probably, more to her neurasthenic condition than to any local disease.

In the left eye, central fixation was lost. In her effort to see letters on the chart the head was rotated strongly to the left so that the image could fall upon the temporal half of the retina, where vision was in an uncertain way about $\frac{1}{10}$. She complained of severe pain in the periorbital region, and left side of the head, which radiated to the occiput and nape of the neck, and a sense of numbness and formication in the left upper lip. There was partial loss of power in the muscles of the left side of the face.

The left eye was strongly convergent and could not be moved outward beyond the median line, owing to complete paralysis of the external rectus muscle. The pupil reacted promptly to light and shade; the eyeball could be rotated inward and downward but not upward even in consonance with the upward movement of the right eye. There was no ptosis, but impaired movement and sensibility in left frontalis muscle which caused some apparent drooping of the upper eye-lid. There was complete left hemianopsia, the cut in the field including the macula.

The ophthalmoscope showed the nerve doubtfully paler than in the right eye but the blood-vessels of the retina were not reduced in size; an isolated beam of light thrown upon the blind half of the retina caused contraction of the pupil.

It will be seen from the foregoing that the symptoms point to a possible intracranial lesion probably a fracture at the base, and also a lesion in the orbital region, together causing injury to some branches of the third, fourth and fifth cranial nerves and a complete paralysis of the sixth. With one exception, the Wernicke's pupillary reaction, the entire symptom-complex may be due to the injury to the walls of the orbit.

For example the blind half of the retina and the marked contraction of the remainder of the field may be the result of injury to the optic nerve in the foramen or resulting hemorrhage in its sheath or along its course within the orbit. Then, too, the injury to the branches of the cranial nerves might well be due to the orbital lesion. The pupillary reaction points strongly to a lesion far back. Too much stress, however, should not be placed upon this symptom, because of the very great difficulty of so directing a beam of light that the portion of the retina still sensitive shall be certainly excluded.

BILATERAL REMOVAL OF THE LENS IN HIGH MYOPIA: THE SUBSEQUENT USE OF DIONIN.[1]

BY

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H. W., aged 18, a boy of average height and weight and apparently healthy, applied at the Dispensary of the Jefferson Medical College Hospital in February, 1905, on account of a sudden and partial loss of vision in the left eye. Both eyes were myopic; R.=21D., L.=23D., and he was wearing R.=12D., L.=13D. With full correction V.=R. $\frac{20}{100}$, L. $\frac{20}{70}$. The ophthalmoscope showed in the right marked changes in the fovea and large posterior staphyloma. The patient stated that for two years he had not used the right in either distance or near and depended solely on the left. During this time he believes he had one or two small hemorrhages. In the left a small round extravasation of blood occupied the foveal center. He complained that vision had been slowly retrograding during the past five years. His occupation was that of a clerk requiring the constant use of his eyes for writing and reading during the greater part of every day. The field of vision was not restricted at the periphery. At the point of fixation in either eye the image was distorted and partly concealed. Under potassium iodid the blood slowly absorbed from the left fovea. During the spring he had two more minute hemorrhages, both in the fovea of the left. He was admitted to the hospital in September and given a daily sweat of two hours for 12 days. For a time vision was improved, then the extravasations recurred, always in the left fovea, aggregating 15 in number, until the disorganized patch equalled in diameter the nerve head. On November 1, the right lens was needled superficially and again in six days. The lens mass was extracted through a corneal incision seven days later and in two weeks the capsule was needled. The left lens was subjected to the same treatment, commencing December 26, for by that time all signs of traumatism in the right had disappeared and vision was sufficiently good for him to travel the streets safely. The capsule of the left was not needled but was completely absorbed, with the exception of a few peripheral tags, by dionin. At present V.= R.$\frac{20}{70}$+1. c. ax. 135°; L. $\frac{20}{50}$+1.=+3. c. ax. 135° and with +3 added he is able to read with either eye +.50D. at 12 in. The pupillary areas in both eyes are entirely clear and were it not for the foveal disturbances the vision would reach full acuity.

This report is presented to invite attention to the unusual features of the case and to the successful outcome of a treatment which has violated most of the rules prescribed for the surgical management of high myopia. To be sure it is only one case and is only an illustration and not a proof of the soundness of the course pursued. Fukala's method is evidently not a favorite in America or the opportunity of following his suggestions on suitable patients presents itself to American oculists in much fewer number than to Europeans for thus far have been reported in America about 50 operations and about 2,500 in Europe. This discrepancy is not as great as at first appears. In this country the number of high myopes suitable for operation is unquestionably less in proportion to the population and in the treatment of myopia we lay greater stress on correction by glasses than by surgical measures. That the operation is justifiable in selected cases seems to be generally admitted but a study of the literature reveals so many restrictions and contraindications that proper selection is an extremely difficult matter, in fact, the operation is practically never justifiable. High and progressive myopia is almost without exception not only associated with the cause of extensive posterior staphyloma, fundus changes, foveal atrophy, choroidal degeneration and hemorrhagic tendency in the fovea and these same are named as the contraindications. Bruns' conclusions are worthy of consideration. "In extreme myopia between 10 and 35 years of age the prophylactic value of the operation is very high, for without it the patient is almost surely doomed to a purblind middle and old age." He excludes as ineligible extreme myopes of elderly or middle age in whom the pathologic changes do not exceed the production of conus. As a rule the danger of extraction will outweigh the benefits conferred; also extreme myopes of elderly or middle age in whose eyes extensive pathologic changes have taken place. There may be exceptions even to these last conclusions. The patient, presented by Dr. Reber to this section last winter, aged 42, was myopic 24 diopters and had large posterior staphyloma and patches of choroidal atrophy. Her vision was more than doubled by the operation. I have seen her several times during the year and know that she is well satisfied. W. Adams Frost[1] says the patients most suitable for operation are those who have just left school and are about to embark on a career. The reason he assigns for this statement is "in these individuals conspicuous glasses are a handicap in obtaining employment." This reason is not without weight in the argument for operation but it is unimportant as compared to the significant indications of advancing myopia and choroidal atrophy. Hirschberg[2] says "removal of the lens is indicated only if the patient be otherwise entirely helpless." J. L. Barnes[3] has written an able and judicial paper, at the conclusion of which he adds a complete bibliography. He states the contraindications to be "known hemorrhagic tendency, choroidal degeneration and lesions in the muscular region, loss of one eye, advanced age and ability to see well with lenses." Lintkewitsch[4] collected the reports of 100 operations. As the result of his investigations he advises against operation in persons who perform severe physical labor because hard work and stooping posture predispose to detachment of the retina—an objection that obtains in all high myopes whether or not the lenses have been removed.

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[1] Read before the Section on Ophthalmology, College of Physicians, February 20, 1906.

All writers are agreed upon the conditions that warrant operation. The myopia should be 17D. or more, Snell[5] says 14D. or more; the subjects should be under middle age; the myopia progressive; vision low even with correcting lenses; insignificant fundus changes; inability to wear glasses, asthenopia and incapacity for work. Thus we are advised to operate and we are advised against operation for almost the same conditions. My own view is that myopia of 15D. or over, known to be progressive in spite of careful refraction, *independent of the common fundus changes*, is suitable for operation because (1) progressive myopia invariably leads to atrophy of the choroid and degeneration of the retina at the posterior pole of the eye; (2) the effort to see clearly in the distance or near by reason of the diminished images seen through strong glasses and the necessity for strong light induces severe and constant strain that in itself tends to increase the myopia; (3) the highly myopic individual is debarred from many occupations; (4) removal of the lens, by curing myopia, checks the further degeneration of the fundus.

Opinions vary as to the influence of the operation in producing detachment of the retina. In Snell's 60 cases detachment occurred in only two. Benson[6] speaks of detachment as a contraindication to operation. One would infer that his experience with detachment is equally as great before as after operation. It is well known that detachment is not an uncommon complication of high myopia and thus far it has not been proved that it can be prevented by operation or that it occurs in greater frequency after operation.

The benefits following successful operation are the relief from heavy and conspicuous glasses, the adaptability to a wider range of occupation, the prevention of senile cataract, not an unfrequent complication of high myopia and the danger attending extraction, and finally, the most important of all, the cessation of the pathologic processes in the fundus. Although myopia has been known to increase following removal of the lens, its growth is gradual and almost insignificant and is not attended with destructive changes in the retinochoroid. The foregoing case furnishes a striking illustration. Every few days for some weeks prior to operation the fovea of the left eye was the seat of minute hemorrhages. Since the first needling there has been no recurrence, the blood and exudation are absorbing, the retinal cells are resuming their function and vision is steadily improving. Lagrange, too, found that in none of his 20 cases had the fundus changes progressed, visual acuity was doubled or trebled and he had not observed detachment. The disadvantage of surgical aphakia is overestimated. The loss of accommodation is immaterial for the circular fibers of the ciliary muscle have little power in high malignant myopia. The dangers are those incident to operation on the interior of the ball, namely, infection, hemorrhage, loss of vitreous, incarceration of iris or capsule, iritis and glaucoma. They may, with the exception of glaucoma, be avoided by careful preparation, thorough asepsis and skilful technic. Glaucoma has followed the escape of the lens into the anterior chamber and the blocking of the filtration angle. The reported cases have without exception been relieved by evacuation of the lens mass through a corneal incision.

The accepted methods of operation are: 1. Extraction as performed for senile cataract. I agree with Bruns that this operation is seldom justifiable in middle aged or elderly persons. 2. Direct linear extraction. The method is open to the objection that the lens capsule is seldom completely evacuated and incarceration of the iris, capsule or vitreous in the wound is frequent. 3. Repeated discission. Recovery extends over a long period of time and may be interrupted by the development of glaucoma. 4. Discission and linear extraction. This method appeals to me as the safest and most rapid. The number of days between the two operations varies according to the amount of lens matter in the anterior chamber. In my cases the interval has been between five and seven days. Attention has been called to the manner of making discission and I think much of the final success depends upon limiting the cutting to the capsule and to the most anterior layers of the lens. Actual breaking up of the lens by passing the needle into the nucleus or the posterior layers invites acute iridocyclitis and glaucoma and exposes the posterior capsule (anterior hyaloid) to rupture and a mingling of vitreous with lens—an unnecessary and dangerous complication.

The question, whether the operation, having been successful on one eye, should be repeated on the other, has not been definitely answered although the prevailing opinion seems to be strongly against the bilateral operation. The objections urged are that the danger of loss of the second eye is greater than the possible benefit and that binocular single vision is practically unattainable. My experience is limited to a single case and I do not presume to offer a contrary opinion. There are, however, two sides to the question and it is at least debatable. If operation is justified at all I would, in suitable cases, operate on the second eye after the first had entirely recovered and in those in which nothing can be gained by operation on one eye by reason of structural changes at the fundus I would operate on the better eye first and the other not at all. It is true that at first at least the patient uses one or the other eye as in ordinary divergent strabismus. I am optimistic and hope that prism practice and the daily use of both eyes will recultivate the fusion center and the convergence.

In conclusion, a few words on dionin. This patient had in both eyes a dense membrane in the pupil consisting of opaque capsule dotted with particles of unabsorbed lens matter. By the use of dionin, commencing with two percent, increasing to five percent and finally to ten percent, the membrane was entirely absorbed from the pupillary area and the pupils have become absolutely clear and unobstructed. In one other adult patient, a case of congenital cataract after linear extraction its action was equally remarkable. In a third, a young man of 15, the subject of traumatic cataract, its action was less complete although satisfactory. In a fourth, a case of extraction of senile cataract, absorption of the lens cortex that was left in the pupil was certainly hastened and made more complete than if the drug had not been used. From the results obtained in these patients I recommend dionin to your consideration.

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THE MASTOID INCISION.

BY

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of Philadelphia.

More than 50 years ago Wm. R. Wilde in an article on mastoiditis said: "Should the mastoid process, or the parts covering it, become engorged, and the methods already recommended fail to give relief, or even an indistinct sense of fluctuation be discovered, we should not long hesitate to make a free incision in the periosteum, at least an inch in length. In performing this operation, the head should be firmly secured and supported against some unyielding substance, as the back of a high chair or the breast of an assistant. A stout scalpel is the best instrument to employ; the blade should be grasped by the forefinger and thumb so as to leave about one inch of it uncovered, and inserted steadily till the point reaches the bone, which it should be made to traverse for the full length of the incision. By this means we secure complete division of the periosteum. With regard to the line of incision, circumstances may require it being made in other directions, but I find it most generally parallel with, and about three-quarters of an inch from the auricle, in order to avoid the posterior aural artery, which when divided bleeds profusely. The knife should be drawn from below upward, and from the swollen state of the parts, the depth which we are sometimes obliged to introduce the instrument is nearly an inch. The hemorrhage, unless we wish to extract blood, may be arrested by placing a dossil of lint within the incision. The cut surfaces generally present the brown like appearance seen in phlegmonoid erysipelas. Although pus may not have been reached by the incision, still immediate relief is almost invariably experienced."

In the half century which has elapsed since this was written, the Wilde incision has remained practically unchanged, excepting, that no longer fearing hemorrhage from the postaueal artery, operators now make the incision close to the auricle and look upon it merely as a means of gaining access to the deeper structures.

There is at present much diversity of opinion in regard to the position of the mastoid incision. Most authorities, however, make it from one-quarter to one-half inch behind and parallel to the postauricular attachment.

Dench states that it should be placed as close to the ear as possible, allowing just enough room for the subsequent introduction of sutures. He begins his incision below the mastoid tip.

Bishop begins the incision at the mastoid tip and carries it up to within three-eighths of an inch of the postauricular attachment; then parallel to the auricle and up to its superior attachment.

Whiting, in his recent book on the "Modern Mastoid Operation," recommends a primary or curvilinear incision one-quarter inch behind and parallel to the postauricular fold, extending from one-half inch below the mastoid tip upward to a point one-half inch above the auricular attachment; then a secondary or linear incision beginning from the posterior margin of the primary incision immediately behind the center of the external auditory meatus and extending thence one inch directly backward toward the occipital protuberance.

In order to avoid the unsightly scars which so frequently follow the mastoid operation I have, for the past two years, somewhat diverged from the usual line of incision, such as just described, and have made my primary incision correspond exactly with the posterior and superior auricular line of attachment. As the skin on the posterior surface of the auricle is freely movable, there is no difficulty in suturing, so that I can see no advantage in placing the incision further back on that account.

For convenience of description I divide the mastoid incision into three parts: 1. An incision coinciding exactly with the posterior and superior attachment of the auricle. 2. An incision extending from the lower end of the first incision to or below the mastoid tip. 3. An incision backward joining and perpendicular to the first incision and on a level with the middle of the bony meatus.

In making the first incision the ear is allowed to remain in its normal position instead of being held forward by an assistant, because it is impossible to place the incision accurately with the loose skin on a stretch and normal relations lost. The first cut, made with a very sharp knife, takes in only skin and superficial fascia. If an attempt is made to carry the first incision to the bone, as is usually recommended, it will be found to be very difficult to keep the skin wound in exactly the right line, the superficial loose structures being pulled aside when firm pressure is exerted in making a curvilinear incision. The deeper structures are then rapidly divided, care being taken to go down to the temporal fascia only, above the temporal ridge, in order to avoid dividing the muscle and incurring unnecessary muscular hemorrhage when there is no particular advantage in so doing. This single curvilinear incision will be found to give ample room in most cases of tympanic exenteration for chronic suppuration and in many acute mastoid cases when the Schwartze or Schwartze-Stacke operation is done, but in which only a small part of the outer table has to be sacrificed. I would protest against the habit, so frequently adopted by many experienced operators, of baring the whole mastoid process as a preliminary step whenever the antrum requires opening. In the large majority of cases the operator has no definite idea of the extent of the internal trouble until the external table is opened. The single curvilinear incision which I have described affords ample room for exploration in all cases and for completing operation in many.

If, after the mastoid is opened and the disease is seen to be more extensive than can be dealt with through this opening, then the operator should unhesitatingly extend the incision to or below the mastoid tip (incision No. 2) and backward toward the occipital protuberance as far as necessary (incision No. 3).

Another incision may be added, extending distinctly upward, on a line with the center of the bony meatus, from the upper extremity of the primary curvilinear incision, if for any reason it is desirable to expose the middle cranial fossa.

The question of suturing is an important one, as it has much to do with the result. Where possible, as in the Stacke and Schwartze-Stacke cases in which drainage is principally done through the auditory canal, the wound is almost completely closed. The more extensive acute cases do better when the wound is left pretty freely open and much more scarring naturally results. I have now been using this method of exposing the mastoid for the past two years and have many cases in which a very careful search is required to find the line of incision, as shown by cicatrix, because of its coinciding exactly with the normal postauricular crease. The cosmetic effect has been especially satisfactory.

CLINICAL NOTES.

CASE OF UNUSUALLY LOW TEMPERATURE FOLLOWING STATUS EPILEPTICUS.[1]

BY

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The case in question was that of a boy about 10½ years of age, who was under treatment at the Colony for 40 days. The assigned etiology was heredity. The patient's father had "spasms" until nine years of age, after which he remained in good health. Patient's infant brother died of "spasms" when five weeks old, having had 54 such attacks on the day of its death. A paternal aunt had "spasms" until her thirteenth year. Paternal great grandmother was insane. Family history otherwise negative.

Personal History.—Dentition difficult, slow and painful. Occasional spasms at the thirteenth month, ascribed by patient's mother to grip. The patient had measles when seven years of age. Stigmata of degeneration, deformities and other abnormalities of no consequence.

Patient had first epileptic seizure when 13 months old. It was *grand mal* in character. Second seizure followed a month later, due apparently to indigestion. During the past two or three years seizures have occurred daily. Some were *grand mal*, but the majority *petit mal*. Usually there was no aura. Mental condition impaired. Patient belongs to the Infirmary class.

His last illness began on July 25, 1905. His temperature was 99°, pulse 120, respirations 24. The temperature increased same day to 100°. Pulse increased also. On the following day the temperature remained at 100°, pulse 120, respirations the same. Appropriate treatment later in the day reduced the temperature, pulse and respiration.

On July 27, temperature again reached 100°, continuing to rise during the day until 8 o'clock at night when it reached 103°, pulse at that time being 156, respirations 30. Appropriate treatment was again effective in lowering the pulse, temperature, and respiration.

July 28. Temperature 100°, during the forepart of the day, increasing to 102°, in the evening. The temperature continued to fall somewhat during the latter part of the same day until 10 p. m. when it reached 99.6°. Practically same conditions as to pulse, temperature and respiration prevailed on July 30, during the forepart of the day. During the evening there was an increase in all three, the temperature at 8 p. m. reached 103.2°, pulse 162, respirations 30. Four hours later all of these had been reduced.

On July 31, the temperature averaged about 100.5°, pulse 140, respirations 30.

On August 1, the temperature began steadily to decrease. At 2 a. m. it was 99.2°. At 12 o'clock, midnight, the same day, it was 96.4°, the pulse being about 124, the respirations 30 during the day.

On August 2, there was a further decrease in the temperature. At 2 a. m. it was 95.2°, pulse 120, respirations 26. At 12 o'clock noon, the temperature had fallen to 86°, pulse 96, respirations 24. At 4 p. m. the temperature was 86°, pulse 90, respirations 24. At 8 p. m. the temperature reached the exceedingly low registration of 81°, the pulse remaining at 96, and respirations increasing to 60.

The patient died at 10.35 p. m. The last three temperatures were taken by rectum, the thermometer being left in place 20 minutes each time.

The unusual subnormal temperature in this case is of special interest when we consider that the extremes of temperature for a normal person is said to be 15°. Some extraordinary degrees of temperature have been noted in different diseases under different conditions. Cases reported by Lowenhardt, Magnan, and Wunderlich are the most remarkable on record.

Lowenhardt reported four cases of insanity, in which the patient before death "and for several days" showed temperatures of 77°, 85.1°, 74.7° and 82.4°. All these cases were in very old people who escaped from custody and were exposed to extreme cold.

Magnan's case was that of a drunken woman who was exposed to cold and sleet over night. She had a vaginal temperature of 78.8°, which became normal in two days.

A number of cases of cholera have been reported by different observers in which there were temperatures of 91.4,° 78.8° and some even lower.

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[1] Read at the fifth Annual Meeting of the National Association for the Study and Cure of Epilepsy, at New York City, November 29, 1905.

The maximum high temperature reported by Wunderlich was in a case of tetanus and reached 112.5°.

The extremes in the case of epilepsy here reported were twice as great as those of a normal human being if we accept the supposition that this case may have come within a degree or two of the maximum temperature reached in the case reported by Wunderlich.

The chief cause of death in the case here reported was hypostatic pneumonia which developed 48 hours before death as a result of status epilepticus.

For 11 hours before death his temperature was 86°, or lower, reaching 81°, 2 hours and 35 minutes before death.

There have been a number of cases of epilepsy with temperatures varying from 92° to 95°, but so far as I have been able to ascertain, none have begun as low as 81° or even 86° and stayed that low for any considerable length of time.

TRAUMATIC RUPTURE OF AN ENLARGED SPLEEN IN A MALAY.

A Medicolegal Case.

BY
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The following case of traumatic rupture of the spleen is reported not only because such cases are quite rare, but also because it happened to be followed by most interesting medicolegal complications. A Malay boy about ten years of age was trespassing upon a military reservation in Luzon where building operations were progressing, and as there had been petty thefts of lumber he was driven off by the foreman—an American. There was no violence used except to give the boy a tap with his foot, but the evidence seemed to show that this tap was such as men are apt to give when playing with their own children. It was certainly too weak to do any harm. The foreman endeavored to frighten the boy and succeeded, no doubt, for the little fellow ran away as fast as he could. In attempting to jump down a four-foot embankment of a road cut, he fell flat on his face on some broken stones. He got up at once but it was noticed that he was now bending over and holding his hand to the left side. He managed to stagger a distance of 25 or 50 yards when he fell down collapsed, was carried to his home a few rods away and died in about an hour.

The postmortem made under the writer's supervision showed death to be due to hemorrhage into the peritoneal cavity from several large lacerations in an enlarged spleen, the linear dimensions of the organ being about two and one-half times the normal. The tissue was very friable—almost pulpy. Previous to the accident the boy had shown no evidence of sickness except some attacks of epistaxis. It was evidently a malarial spleen as it is known that the Malay can harbor the plasmodium in large numbers and yet present no symptoms unless his resistance is reduced by some other cause. Blood-examinations of a company of native scouts, made under the writer's directions, showed 20 percent of the men infected and yet they had not shown the slightest symptom of it.

The American was at once arrested by the civil authorities, all of whom were Filipinos, and was charged with murder. A native physician testified that in his opinion the rupture was due to the kick and they all ridiculed the idea that a fall could have been the cause. As it was in a part of the islands where all the natives were intensely hostile to Americans, it is not to be expected that unbiased testimony can be obtained when any white man is the accused. The court evidently accepted the view of the American surgeons that the fall was the cause of the rupture, but as the mere fact of making an assault, even though it was unintentional, was illegal, the accused was responsible for any untoward consequences. He was, therefore, sentenced to a year's confinement, but released on bail pending action on a petition for a pardon which it is understood was subsequently granted.

Osler states that rupture of an enlarged malarial spleen may occur spontaneously, though it is more commonly from trauma. No spontaneous cases are known to have occurred in America, but are said to be very common in Mauritius and India. Rupture of an enlarged typhoid spleen may occur spontaneously or from a slight trauma. The above case would seem to indicate that trauma is the rule in all cases, for in spontaneous rupture there is quite apt to have been an unrecognized injury, except possibly in typhoid abscess of the spleen. The case is doubly interesting as showing the character of expert medical testimony from Filipino physicians if there is any bias, and how an

American might be made the victim of persecution in accident cases we habitually ignore at home. Musgrave, Wherry and Woolley, of Manila, have been investigating tropical splenomegaly (dum-dum fever or kala-azar) and find that it is not at all uncommon in the Philippines. It is accompanied by irregular fever, but on account of the resemblance to malaria, it has been generally overlooked. The above case may have been an instance of the disease, particularly as there are hemorrhages and other discharges from the mucous membranes, and gastrointestinal disturbances, with tendency to jaundice and edemas. It is most common from 15 to 25 years of age and this boy may have been an exceptional case of traumatic rupture of tropical splenomegaly.

PECULIAR SYMPTOMS FOLLOWING THE ADMINISTRATION OF ANTITOXIN.

BY

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Until a few years ago, diphtheria was a disease greatly to be dreaded, as in many instances it practically annihilated families in the space of a few hours. Up to the time of the introduction of antitoxin almost no treatment other than the symptomatic was followed. Thus far this has proved almost specific for the disease and one by one even the most skeptical are being won over to favor it. Concerning the great effect it has had in preventing and overcoming the disease but little is on record to prove that its administration may in some instances be deleterious. On the contrary it has been shown to be practically harmless and the complications following its use are trifling as compared with those of the disease for which it is given. In view of these facts it would seem that any facts concerning this remedy should be of interest and I am therefore desirous of placing the following case on record:

On November 27, I was called to a family where a child, aged about 6, had died with very suspicious symptoms that led me to inquire about the conditions of other members of the family. I found the parents and one child unmistakably ill with diphtheria. Antitoxin was soon procured and administered immediately to those having the disease and in immunizing doses to those who had been exposed to it. All took the antitoxin well with the exception of the father, D. W., aged 48.

He had been feeling badly all the afternoon and toward evening his throat began to feel sore. At about 8 p. m., I discovered patches on both tonsils. His pulse was 80; temperature, slightly above normal. His heart was not diseased. Two thousand units of diphtheric antitoxin were administered a little inside of the right subscapular region, care being taken that the operation be done in an aseptic manner.

In a short time he had what at first appeared to be a fainting fit, but he was not easily revived, coming only to partial consciousness for some little time. However, he revived sufficiently to complain of great dyspnea and a feeling of chilliness which developed into a rigor. The dyspnea lasted at least an hour and a half.

His temperature began rising till the highest point, 103°, was reached, in three hours from the time the antitoxin was administered. The pulse went up to 120. Pupils showed contraction. As he was feeling easier I left him about 11 p. m. The next morning, he reported feeling much better. His general feeling, and especially his throat trouble began to feel easier about 4 a. m., just eight hours from the time the serum was administered.

The membrane had commenced to peel from his throat, but after the second or third day, his condition did not improve so rapidly. Another dose of antitoxin would probably have helped him so far as the diphtheric condition was concerned, but I did not care to again experience what followed the first dose. He ultimately made a good recovery after having adenitis in the right submaxillary gland, and some paralysis of the arms and legs.

During the previous spring he had had measles, and of late years had been somewhat subject to rheumatism. The following April he told me he had been freer from rheumatism than he had been for some time previous to his attack of diphtheria. He was not of a nervous temperament or disposition.

The question arises as to what caused the train of symptoms. Did the antitoxin, was it an idiosyncrasy, or was it coincident, coming from the disease from which he was suffering? I am unable to answer and I find nothing in the literature that would explain it. The nearest explanation is by Dr. Arthur Somers, of Selby, England, who reports "A Case of Diphtheria Treated by Antitoxin on the Seventh Day."

He concludes:—"The mother informed me that two hours after the first and the same time after the second injection of serum, she thought the child was dying, as she became cold, and appeared to faint, but after half an hour or so she improved again. This statement is of interest, owing to the attack of syncope occurring twice, and at the same period after the administration of serum. It may, of course, have been only a coincidence, or the serum may have been the cause."

Dr. Henry W. G. Webster, of Brooklyn, N. Y., gives the condition of a man of 26, moribund with epidemic cerebrospinal meningitis. He had a temperature of 105°, pulse 160, respirations rapid and irregular. A lumbar puncture had been done for therapeutic reasons and while the needle was still *in situ* 3,000 units of antitoxin were injected. His pulse soon went up to 200, he became cyanotic, ceased breathing, and died. Webster thinks the cyanosis could hardly be attributed to the antitoxin as the circulation was rapidly failing previous to the injection. The injection of clear water might cause similar phenomena, or it might have been caused by the cerebral trouble.

Different writers mention a rash which occasionally appears.

Dr. Henry G. Godfrey, of Philadelphia, in "An Analysis of Fifty Cases of Diphtheria" says, "the untoward effects of antitoxin were as follows: Arthropathies of knee and hip, two cases, urticarious rashes in eight. In one the rash was preceded by vomiting and diarrhea, and the urine showed increase of albumin and casts. A hectic type of fever developed in convalescence in one patient in whom pulmonary tuberculosis had been previously suscepted. All of these toxic manifestations made their appearance between the eighth and eleventh days and were of short duration."

I have made no mention of the bad or disastrous results which come from careless or faulty technic or the use of impure antitoxin, because it would seem unnecessary. I hope this subject will be added to by reports of other cases and by the experience of those who have had similar phenomena to contend with.

SPECIAL ARTICLES.

PROFESSIONAL ERRORS AND PROFESSIONAL TOLERANCE.

BY

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It seems strange that so vital a department of general medicine as therapeutics should suffer comparative neglect at the hands of those who assume the deepest interest in their profession. Want of faith in the efficacy of drugs is common to many practitioners who, were they more keenly alive to the true character and properties of curative agents, might find their practice attended with far greater prestige, as well as by greater practical success.

It is of paramount importance to become thoroughly familiar with the action of various groups of medicines, their mutual relations, and their specific influence—to ascertain by actual experience the reasons for employing a certain agent under one condition, and a different one under another. There is a therapeutic method in these various changes of treatment which to the ignorant never occurs, but which to the skilled practitioner is the best of medical knowledge.

Our medical schools reflect the prevalent apathy touching the nature of various drugs and their action in diseases, the study of which may justly be elevated to the rank of a science. The enthusiastic aspirant after medical attainments shrinks from the ordinary elucidation of therapeutics as found in our textbooks. When he comes to practise he is ignorant of this important subject, and readily acquires the pernicious and unscientific habit of prescribing polypharmic "ready-made" mixtures. Let us, therefore, acquire a better knowledge of active, dependable remedies, their exact action upon the cells and tissues of the body under various conditions, and we will thereby acquire additional interest and zeal in our profession, and our success in relieving and curing our patients will be much greater. What may be good therapeutics in one case may prove injurious in another. Each case should be carefully studied and treatment directed to the existing condition. The doctor deals with live people and should endeavor by every wise means to keep them alive, and he will generally be rewarded, not only by generous patronage, but even more by the respect and confidence of the medical fraternity and the approval of his own conscience.

I am often impressed by the tendency to dogmatism manifested in the medical profession regarding the value of certain remedies or some special line of treatment. Not long ago I heard an able, earnest, country doctor read a paper on the treatment of erysipelas with a certain plant found in the locality where he resided, whereupon a certain surgeon, who knew nothing about the efficacy or futility of the treatment, proceeded to "roast" the doctor and ridicule the method as being absurd and unscientific. We cannot afford to belittle the results of such observation and experience.

In its struggle for progress, medicine has often turned from its great masters to the patient toilers in rural districts whose work, when it was finished, remained to afford a foothold to those who came after. And in this lies the present greatness and the hope of every true science.

It need scarcely be said that it behooves us all to maintain an attitude of the widest toleration Let us be liberal and open to conviction. If our opponent be wise we should hesitate to impugn his talents and earnestness, even though they militate against some pet conceit of our own. If he be ignorant he may yet be sincere. And who of us has not at some period been guilty of the grossest incapacity? As Thackeray has said: "A man who has reached the age of thirty and never made a fool of himself is a fool."

No thoughtful student of medicine can fail to see the immense advantage of a liberal mind in the pursuit of truth. It is of signal importance that the physician should not only welcome every advancement in therapeutics, but he should at all times be willing to put the broadest construction upon opinions conflicting with his own.

While it is true that the brilliant accomplishments of surgery attract wider attention, it is equally true that the quiet labors devoted to investigation in therapeutics bear no less directly and no less powerfully upon the health and happiness of mankind. The zeal with which the general practitioner seizes upon the latest discoveries in the healing art is eloquent testimony to the universal craving for new medical knowledge. The list of "incurable diseases," for example, is constantly narrowing, thanks to widespread, frequently provincial, study and experiment and the earnestness and sincerity which many physicians of today bring to the exercise of their profession. Never was the outlook for medicine brighter nor the attainments of therapeutic skill better calculated to inspire confidence. The enormous variety and circulation of medical literature attests the universality of interest in the physician's labors. It is extremely difficult to keep pace with modern investigation, and as Professor William James, of Harvard University, has well said: "The whole face of medicine changes unexpectedly from one generation to another in consequence of widening experience."

If a man were placed before a dark wedge of infinite size, his face to the edge, a feeble light from behind him would illumine its nearer portions. If the light were gradually increased, an increasing area of illumination would spread before him, beyond which an expanding area of darkness would hover, still looming in more impenetrable profundity the more the brightness grew. So it is with medicine, particularly as to the true nature of disease, its etiology, and its treatment. Such wedges seem to me to radiate in countless lines from every different point of view, each expanding with the unresponsive depths beyond.

> "And in the lowest deep a lower deep,
> Still threatening to devour—opens wide."

Should any physician, then, having the interest of his profession, and of humanity, at heart, obstruct the light by ever so little? No! We should admit candidly the value of any method, theory, or practice which may promote the common object of alleviating human misery, taking the generous view of things, without which the pursuit of learning is but a jaundiced melancholy affair.

Fortunate it is for him who has early learned the charity and liberality which characterize all genuinely great and progressive men in every profession: His open heart and intellect are spared many a regret, and throughout his career for him the sun of truth is shining everywhere.

Merger Completed.—The last formality in the merger of the Chicago Medical College and the Northwestern University was consummated July 24, when the Chicago Medical College, through its president, gave a quitclaim deed to the Northwestern University for all of its property. The intent of the conveyance is that there shall be a complete merger between the college and the university free of all claims, limitations and obligations existing by virtue of any contracts heretofore entered into between the two institutions.

NOTES ON THE VITAL STATISTICS OF THE PHILIPPINE CENSUS OF 1903.[1]

BY
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The Philippine Archipelago in latitude extends from N. 4° 40′ to N. 31° 10′, and in longitude from E. 116° 40′ to E. 126° 34′. There are 3,114 known islands comprising a land area of 115,026 square miles.

The inhabitants are mostly Malays, Chinese, and Negretos and a mixture of the races. The Negretos, living in the more inaccessible parts of the mountains, are said to number 23,000.

According to the census innumeration there were on March 2, 1903, 7,635,426 people on the islands, 6,987,688 were classed as civilized or partly civilized. There were 8,135 Americans, 6,136 other whites and 41,035 Chinese.

The density of the population for the entire archipelago was 67 per square mile. The most densely populated province, Ilocos Sur, had 398 persons to each square mile; 65 percent of the Christian population (civilized natives) live on the seacoast.

The average birthrate computed from records for the years 1876 and 1885 to 1898 was 47.9 per thousand. The average deathrate for the same period was 39.7 per thousand, but omitting the cholera years 1879, 1889 and 1890 it was 31.7.

The following tables with slight modification are taken from volumes I and III of the census of the Philippine Islands, 1903.

The census was taken under the direction of General J. P. Sanger, U. S. A., Major Charles Lynch, Surgeon, U. S. A., being his medical adviser.

From a study of the following tables which accounts for 93.9 percent of the deaths in the Philippine Islands and for 65.4 percent of the deaths in the United States, it will be seen that in general the excess in deathrate in the Philippines occurs among the preventable diseases. For such diseases as pneumonia, measles, influenza, typhoid fever, and diseases of the kidneys, the Philippine deathrate is much lower than in the United States. This would seem to indicate that the deathrate in the Philippines will not be excessive when proper sanitary measures have been instituted and when the inhabitants reach such a stage of civilization that they will observe the ordinary rules of personal hygiene.

The mortality among children under five, is very high, being 462 for the brown, 356 for the yellow and 586 for white people. This mortality is largely preventable. Among the native people many children die of convulsions; probably most of them are cases of tetanus, the infection taking place through the cord.

Distribution of Deaths in the Philippine Islands and the United States, by Principal Causes, Expressed in Percentage of the Total Number of Deaths.—1902.

Cause of death.	Philippine Islands.	United States.
Cholera	31.1	....
Malarial fever	26.8	1.4
Tuberculosis of the lungs	6.6	10.7
Epilepsy	5.1	0.3
Dysentery	3.7	1.1
Convulsions	3.6	1.5
Smallpox	3.4	0.3
Diarrheal diseases	3.2	3.3
Beriberi	1.3	....
Diseases of the stomach	1.2	1.3
Bronchitis	0.7	1.9
Accident	0.7	....
Pregnancy	0.7	0.6
Measles	0.6	1.2
Tetanus	0.6	0.2
Influenza	0.4	1.6
Typhoid fever	0.4	3.4
Diphtheria	0.3	1.6
Croup	0.3	1.2
Asthma	0.3	0.3
Simple meningitis	0.2	1.2
Congestion, hemorrhage, and softening of the brain	0.2	....
Congenital debility and malformations	.... 0.2	....
Erysipelas	0.2	0.3
Tumors	0.2	0.3
Rheumatism	0.2	0.5
Anemia	0.2	0.2
Scarlet fever	0.1	0.6
Whoopingcough	0.1	0.9
Dengue	0.1	....
Other forms of tuberculosis	0.1	....
Cancer	0.1	2.8
Organic diseases of heart	0.1	6.7
Pneumonia	0.1	10.2
Nephritis and Bright's disease	0.1	3.5
Puerperal septicemia	0.1	0.3
Female diseases of the genital organs	0.1	0.3
Paralysis	0.1	2.3
Diseases of pharynx	0.1	....
Diseases of bones	0.1	0.1
Hemorrhage	0.1	....
Senile debility	0.1	2.8
Bubonic plague[1]	....	....
Leprosy[1]	....	....
Suicide[1]	....	0.5

[1] Represented.

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[1] Abstracted for the American Society of Tropical Medicine; published under the auspices of the Society.

Table I shows the percentages of deaths from the more important diseases by season for the year 1902:

The foregoing statistics confirm the general impression gained from three years' service in the Philippines, that the greatest deathrate occurred in the wet season. Variola is more fatal during the dry season while there is little seasonal differences for malaria.

Table of deaths in 1902 arranged by months and seasons, with percentages of total number of deaths which occurred in each: are shown in Table II.

TABLE I.

Disease.	Cool Season.	Warm Season.	Wet Season.
Cholera	12.7	15.1	72.2
Beriberi	27.5	33.1	39.4
Variola	28.6	47.1	24.3
Tuberculosis of lungs	29.4	33.0	37.6
Bronchitis	27.2	35.1	37.7
Dysentery	18.3	27.5	54.2
Diarrhea	21.5	29.1	49.4
Malarial fever	34.4	33.9	31.7

TABLE II.

Cool Season			Warm Season			Wet Season		
Month	No. of deaths	%	Month	No. of deaths	%	Month	No. of deaths	%
November	31,022	7.0	March	25,663	5.8	July	54,974	12.4
December	29,631	6.7	April	28,279	6.4	August	54,171	12.3
January	33,906	5.4	May	31,713	7.2	September	54,442	12.3
February	23,742	5.4	June	39,549	9.0	October	44,725	10.1
Total	108,301	24.5	Total	125,204	28.4	Total	208,312	47.1
Unknown, 241								

TABLE III.

	Cold Season		Hot Season		Wet Season	
	Normal	1901–2	Normal	1902	Normal	1902
Mean temperature	77.7	75.4	82.2	82.8	80.6	80.4
Maximum temperature	95.9	91.4	100	97.0	95.8	93.9
Minimum temperature	60.3	60.3	63.3	72.1	68.9	71.8
Mean relative humidity	78.7	79.0	75.2	73.9	84.4	84.6
Precipitation	78.87	13.23	15.70	14.86	50.89	46.42
Number of rainy days	28	42	31	40	77	81

Table III shows the normal meteorologic conditions at Manila (latitude N. 14° 35′, longitude E. 121°) and the conditions that prevailed in 1902:

The following table of comparative deathrates of whites in the Philippine Islands and the registration area of the United States shows the relatively great mortality among children under five:

Age Group.	Philippine Islands.	United States.
Under 1 year	448	165
Under 5 years	138	52
5 to 14 years	22	4
15 to 24 years	20	6
25 to 34 years	21	9
35 to 44 years	27	12
45 to 64 years	47	22
65 and over	391	87

The deathrates are analyzed by color and those of the brown people by sex in Table IV.

Table V show each of the three most prominent races—brown, white and yellow—and for the eight principal diseases, the proportional number of victims of each disease to the total number of deaths of the race in 1902.

The following table shows the relation of disease to the seacoast:

Disease	Deathrate Interior	Deathrate Coast
Malarial fever	23.7	13.8
Cholera	21.4	18.9
Tuberculosis of the lungs	5.7	3.4
Diarrheal diseases	5.7	3.6
Smallpox	2.2	2.1
Beriberi	0.6	0.9

The table should not be interpreted to mean that the lowlands are more healthy than the higher ground. Very little of the higher ground in the Philippines is occupied by civilized population.

TABLE IV.

Age Group	Brown			Yellow	White
	Total	Male	Female		
Under 1 year	321	348	293	—	448
Under 5 years	141	151	131	356	138
5 to 14 years	43	45	41	87	22
15 to 24 years	33	33	33	18	20
25 to 34 years	42	42	42	22	21
35 to 44 years	49	50	48	29	27
45 to 64 years	70	75	65	52	47
65 and over	146	150	142	212	391

TABLE V.

Disease.	Brown.	White.	Yellow.
Cholera	31.1	42.9	31.4
Malarial fever	26.9	4.0	10.7
Tuberculosis of the lungs	6.6	3.3	12.5
Dysentery	3.7	6.0	4.7
Diarrhea	3.1	3.3	2.8
Senile debility	1.5	1.1	0.6
Beriberi	1.3	....	8.3
Diseases of the stomach	1.2	1.6	0.9

TABLE VI.

	Total	Brown	Mixed	Yellow	White	Black	Total per 100,000
Insane	15,372	15,328	16	15	9	4	220
Blind	15,811	15,772	19	13	7	0	226
Deaf	23,227	23,176	16	20	12	3	332
Deaf and dumb	5,910	5,907	3	0	0	0	85

Cholera appeared in Manila in March, 1902, and spread rapidly over the islands, causing 31.1 percent of the deaths that year and 19 percent of the deaths in 1903. The total number of deaths from this disease recorded in the census reports was 200,348. During the epidemic of 1879 there were about 400,000 deaths from cholera and in 1889–1890 the mortality from the disease was about 260,000. At the date of the present writing (September 6, 1905) the daily press reports the reappearance of the disease in Manila.

Table VI shows the statistics relative to the defective classes among the civilized population:

Manila, the chief city of the archipelago, is situated on the west coast of the island of Luzon in latitude N. 14° 35′. It occupies the delta of the Pasig river and the soil is damp and badly polluted.

The population as given by the census was 219,928. The deathrates since 1900 were as follows: 1900, 44.5; 1901, 42.6; 1902, 69.2; 1903, 44.7.

The high rate for 1902 was caused by the epidemic of cholera that prevailed during that year.

The following shows the deathrate for Manila and several other tropical cities: Bombay, India, 1901, deathrate 76.7; Manila, P. I., 1903, deathrate 44.7; Alexandria, Egypt, 1901, deathrate 37.3; Calcutta, India, 1903, deathrate 37.0; Cairo, Egypt, 1901, deathrate 34.8; Havana, Cuba, 1901, deathrate 22.1.

In the following table are shown the deathrates for the principal diseases for Manila and the rest of the archipelago for 1902:

Disease	Deathrate for Manila	Deathrate for Archipelago
Convulsions	16.7	2.3
Cholera	15.6	20.0
Tuberculosis of lungs	4.5	4.0
Bronchitis	3.8	0.4
Diarrhea	3.2	2.0
Dysentery	1.9	2.0
Meningitis	1.7	0.2
Malarial fever	1.5	17.0
Beriberi	3.8	1.0

DIGEST OF LITERATURE.

MOVABLE KIDNEY.

BY

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of Philadelphia.

Benjamin Franklin said, and with a wide range of truth, that "an ounce of prevention is worth a pound of cure." That this applies to movable kidney cannot be gainsaid, as our consideration of the possible ultimate consequences of movable displacement of the kidney shows.

As to the prophylaxis, such measures may be deduced from the etiology, and consist, as Fischer[1] has pointed out, of care during the menses, prevention of obstipation (Knapp), avoidance of conditions of meteorism (LeGendre), an appropriate hygiene during labor, and wholesome clothing. Great importance is attached by all authors to the strict observance of instructions during labor, as rest in bed for a week at least, followed by the wearing of an abdominal binder. That class of women prone to follow the physician's advice should be prevailed upon not to lace tightly, and to taboo high-heel boots. Those willing to discard stays may substitute bodices for dependency of the skirt, or the employment of shoulder-straps in order to transfer the weight of the skirt from the waist to the shoulder. Too frequent pregnancies, indulgences, or abortions should be curbed. Lacerations of the perineum, uterine prolapses, and pendulous belly should receive appropriate treatment. In men, the wearing of narrow belts should be prohibited. Smithwick[2] says that the chief need for prophylaxis or cure is a permanent and abundant reserve of nerve energy that should be accumulated by the previous generation, and that this nervous reserve, without which other desirable conditions, as increase of permanent fat and of intraabdominal pressure, may be impossible, must be considered of prime importance.

Given a patient requiring conservative treatment, much may often be accomplished. Thus, Aaron,[3] from observations on 442 cases, believes that 90 percent of patients who suffer from movable kidney and associated ptosis can be relieved without an operation. Still better results have been obtained in 300 cases, purely mechanical measures proving efficient in 95 percent in the hands of Treves.[4] Larrabee[5] says that in his experience corset-like apparatus does give relief and often great relief for a time, and that some form of abdominal support should be used whenever, for any reason, an operation is not desired. The consensus of opinion is that abdominal supporters are meet in cases of movable kidney in the presence of splanchnoptosis. As a corollary to this, Hamilton[6] states that if a properly adjusted support gives relief, it will point to the fact that the symptoms are due as much to general enteroptosis as to the movable kidney. A positive test for the beneficial effects of a band is suggested by Aaron,[7] in which the physician should stand behind the patient, passing his arms on either side and placing both of his hands on the lower abdominal wall. When the physician's hands are in this position, the abdominal mass just above the pubes can be easily palpated and raised. By supporting the abdomen in this way, the patient will immediately say that he feels much better. Removing the hands suddenly allows the abdomen to fall, which produces a distressing sensation due to the falling of the displaced viscera. On the other hand, when the patient has no relief from lifting the abdomen, and feels better when allowing the abdomen to fall, the band is not indicated.

Many authors oppose the use of mechanical supports, among whom are Holmes, H. Morris (in uncomplicated cases), Hinder, Gallant, Allison, Abbott. The reasons advanced are pain and discomfort (as reflex vomiting, tachycardia, or even paranephritis), irksomeness to the patient, and, according to Hinder,[8] the patient need only tauten abdominal muscles, as stool-straining, and the pad must fail to act, and the kidney wanders or is shot out of the position in which it has been placed; those patients who express themselves as being relieved, either never had much trouble, or are relieved by the counterirritation of the uncomfortable pad. These failures are attributed, by the advocates of abdominal supports, to misfit or improper application of the same. Too frequently is this matter left entirely in the hands of the truss maker, so that a poor workman blames his tools.

There are, perhaps, as many modifications of the abdominal binder as there are of the operation of nephropexy. Such vary from the simple abdominal binder to the truss with complicated pad and spring devices, the object of the latter being to press the kidney directly from in front toward the lumbar region, and to fix it in its normal position. The binder may be made of any flexible material, as jean (Newman), rubber or silk knitting, or linen (Mass, cited by Fischer). Aaron constructs them out of stiff material, and aims at a uniform pressure over the whole lower part of the abdomen, arranging pads so as to push each displaced organ from below upward and backward. Pentzoldt(cited by Fischer) adds thigh straps to the binder, into which pads are sewn, thick below and becoming thinner above, or wedge-shape in longitudinal section. In addition to the thigh bands, Schmid thinks that shoulder-straps are often necessary. The binder can be worn under the usual corset or it can be fastened to the bodice itself. Stays very similar to the modern "straight-front" corsets were employed 22 years ago by Landau (*loc. cit.*), and the latter, when properly applied, are, even at the present time, probably the most satisfactory and comfortable of mechanical appliances that are at our command. A combination of binder and corset is present in the bodice of Philipp, recommended especially by Kuester, embracing equally the breast, abdomen, and pelvis, the upper part of the symphysis and Poupart's ligaments, but bearing an appropriate slope that makes sitting down possible. Smith[9] states that in his experience, unpadded abdominal supporters have proved of little value except in cases of marked diastasis of the recti muscles. Watt[10] arranges wing-shape sheet-lead plates attached to the corsets, that so steady the movable kidney in its position, as to fix it in three or four months. Reed[11] employs, as does Rose, plaster strapping of the abdomen, aided by a small pad of cheese cloth. Treves (*loc. cit.*) describes an original truss devised with the idea of reproducing the pressure of the fingers. It consists of a thin, carefully padded metal plate, which exercises pressure upon the abdominal walls by means of two springs, so that the kidney is forced upward and outward; weight six ounces. Treves adds that in a large proportion of cases the truss can be given up at the end of 18 months or two years. Newman[12] uses an air-pad placed over the region of the kidney, after the patient has drawn on a tightly fitting silk or wool jersey; over the pad the corsets or elastic band are buckled. The air-pad may be inflated after the band has been adjusted. Barling[13] has used this method with success and undoubted benefit. To prevent a binder pushing upward, a springing pelvic ring may be employed. In the presence of abnormal anatomical conditions, as, for example, kyphosis, abnormal corpulency, or a very hard skin, the use of the binder becomes restricted (Schmid, cited by Fischer). More accurately to obtain the shape of the patient just at the lower edge of the displaced kidney, Aaron (*loc. cit.*) is in the habit of taking a model of the abdomen with a piece of pliable lead.

Having selected an appropriate apparatus, how may it be used to the best advantage? Given a properly fitting support, the patient will often solve this question for himself, after he has become accustomed to it. Thus, it is better to apply it after daily morning evacuation of the bowels, after the kidney has been replaced as much as possible, and in the horizontal or even Trendelenburg position, Sprigg.[14] The latter recommends that the patient sleep on an inclined plane, with the foot of the bed elevated six or eight inches. Penzoldt says that the binder must lie so firmly that the hand can be pressed in neither from above nor from below between the pads and belly wall without the employment of force. The support should be put on during the expiratory act. Some authors recommend that the binder be worn all night. Of course the efficiency of the binder must be retained by renewals when worn out. Smith's (*loc. cit.*) method is to fit accurately a padded, corset-like belt to be put on with the hips raised, in the morning before getting up. Two perineal strips are fastened first, the lowest strips next, and so on, the object being, not to attempt to pad the kidney itself, but to hold the intestines up against the liver and diaphragm, thus hoping to prevent the kidney from dropping.

Aaron states that after the proper fitting of the band, an examination of the stomach contents will decide the best dietetic and medicinal method of treatment.

As to the dietetic treatment, Noble (cited by Fischer) considers forced alimentation indicated if the kidney has dropped only two or three inches, and Arendt (*loc. cit.*) employed it in a patient who recovered in the course of six weeks with addition to the body-weight of about 16 pounds. Newman (*loc. cit.*) says that rest in bed, together with a careful dietary, may induce not only a redeposit of subcutaneous fat, but may also, by padding out the structures round the kidney, lead to the organ becoming fixed in its normal position, and that he has seen excellent results, especially in emaciated young women. Forced feeding is also recommended by Aaron and Sprigg (*loc. cit.*).

Medicinal treatment concerns itself chiefly with tonics, of which strychnin, mercuric chlorid, iron lactate and Donovan's solution may be taken as types. Stomachics, of which the basis may be quassia or gentian, to which various adjuvants and corrigents may be added, may be employed in conjunction with the treatment by forced alimentation. To obviate constipation, we may employ a laxative cathartic, as cascara sagrada or effervescing magnesium citrate, a purge, as Lady Webster's pills, or an aperient mineral water. To control vomiting, we may administer chloroform water, cocain with oxalate of cerium, extract of cannabis indica, a few drops of one of the solutions of arsenic, or gastric lavage, and a suitable dietetic regime, beginning with iced champagne, milk, then eggs, well-chopped beef, purees, and, in severe cases, alkalinized meat powder, which is highly recommended by Mathieu (cited by Fischer). For torsion of the kidney, or the incarceration of Dietl, the organ should be reposited, as an aid to which Albarran (cited by Fischer) recommends taxis in narcosis with assumption of the Trendelenburg position, complete rest, opiates and warm fomentations applied over the kidney at fault. Newman (*loc. cit.*) advises treatment of renal crisis by complete repose in bed, assisted by the application of hot poultices, made with boiling water plus carbonate of ammonia (30 grains to the ounce), fomentations, hot-air bags or hot sitz baths, and by the application of anodynes over the seat of pain, or the administration of morphine by subcutaneous injection or rectal suppository. He has found dry cupping, or the application of leeches of benefit in extreme cases of renal colic. In cases of acute transient hydronephrosis, dilation of the large bowel with a hot saline solution produces almost immediate relief, but very full distention is necessary; this is best done in the knee-chest position. In other cases, abdominal palpation in this position may give relief by untwisting the kinked ureter. It is interesting to note that Günzburg (cited by Fischer) has proposed the administering of small amounts of yeast, the meteorism from which will contribute to fastening of the organ and diminishing its sliding here and there. This is mentioned only to be condemned, as, of course, it is too theoretical, and must needs render an abdominal support very uncomfortable.

Electricity in the form of galvanization or faradization, and hydrotherapy in the form of cold applications, douches, or baths may do good (Fischer, *loc. cit.*).

Massage plays an important role in the conservative treatment of movable kidney, and the benefit to be derived from it will be commensurate with the diligence with which it is performed. There is no doubt that, in the hands of experts, it is a powerful mode of therapeusis, even though it need be carried out for years. Thus, Kumpf reports over 60 percent permanent cures, and considerable lasting improvement in 20 percent; in 40 cases, Fellner obtained excellent results in 38, and Mayor has had patients back at work in from 8 to 14 days (cited by Fischer). The best method is that of Thure-Brandt. To restore the much-needed tone to the abdominal musculature, it may be stimulated to strong contraction by small thrusts with the finger-tips, together with appropriate gymnastics. Vibrations and pinchings under the kidney tend to produce subcutaneous circumscribed inflammations in the perirenal tissue and peritoneum, which lead to shrinkage of the perirenal cellular tissue and the formation of adhesions to the posterior abdominal wall (Bum, cited by Fischer). As to the number of massages necessary for the cure of a wandering kidney, Fellner (*loc. cit.*) has often attained the object with 7 to 10, while in other cases from 20 to 30 have been required. The Italians believe that massage has no value unless enteroptosis be present. Newman (*loc. cit.*) believes that the essential element in all palliative treatment is rest, together with general massage, omitting any manipulation in the region of the kidney, and a careful dietary. Not only may relief be obtained, but if prolonged rest in bed can be carried out, a cure may be effected. All forms of exercise involving active and sudden movements of the body must be forbidden.

Treves (*loc. cit.*) states that while rest is not a panacea for all examples of movable kidney, it is at least an admirable preliminary to any more detailed treatment of the condition, and that the socalled rest cure carried out for a month has not caused the movable kidney to cease to move, but it has rid the patient of her symptoms.

The indications for operative interference vary according to the disposition of the surgeon. Thus, those that advocate conservative measures are loath to operate; while those that see no benefit to be derived from conservative treatment consider but few cases unsuitable for operation, and furnish long lists of indications which cover, more or less, the requirements of individual cases. Others go to the extreme of operating in every case as soon as the diagnosis is made. Many advise operation only after a faithful trial of conservative measures, in the event of their failure.

Opinions are almost unanimous that nephropexy should not be performed when the movable kidney is associated with general enteroptosis (H. Morris, Thorndike and Crandon, R. T. Morris), unless it can be clearly shown that serious symptoms are directly due to the displacement of the kidney (Newman), or unless treatment is directed to these complications (Sprigg), such as shortening of the suspensory ligaments of the liver at the same time (R. T. Morris), and splenectomy, gastroplication (Beyea's operation), gastrojejunostomy, and suture of the recti.[15] On the contrary, Récamier (cited by Fischer) states that he has performed nephropexy also in enteroptosis with the best results. This latter statement is supported by the hypothesis of Aufrecht (*loc. cit.*) that nephroptosis is the starting-point of enteroptosis.

Aiming at prophylaxis of the various possible sequels, Cabot[16] says that when it is clear the symptoms are caused by the dragging of the kidney, and when these symptoms are becoming more and more pronounced, it is wise to fasten the organ in place early before the irritation has set up serious nervous symptoms, and also before the formation of a hydronephrosis or of a subacute nephritis, such as may be caused by frequently repeated congestion. It has been his experience to find that patients who were greatly benefited by this operation were those in whom the symptoms had existed for a comparatively short time; whereas, in those patients with pronounced nervous symptoms which had existed four or five years before operation, the result has usually been unsatisfactory.

Of the conservative surgeons, Treves (*loc. cit.*) has abandoned the operation except in the following examples—cases in which there were torsion symptoms; some cases in which the patient would be residing in the tropics, many hospital cases in which the patient had to work for her living and could neither indulge in a long-sustained rest, nor properly manage a truss requiring some delicacy in its adjustment. Others advise operation when a proper mechanical support fails to hold the kidney in place and the annoyng symptoms are persistent (Aaron, Halstead, Barling, Newman, Sprigg). This indication is detailed by H. Morris[17] who says that operation is called for when symptoms occur in spite of the avoidance of active exercises, when pain, aching, and a wearing sense of dragging weight or of great lassitude are caused by ordinary standing or walking, or when pain occurs even during absolute quietude and total avoidance of every form of physical exertion; when mechanical appliances cannot be borne or seem to increase rather than to mitigate the symptoms; in cases in which, in spite of palliative treatment, paroxysms of nephritic colic, fainting, sickness, vomiting and pain radiating far and wide in the course of the branches of the lumbar plexus of nerves occur frequently. To these Debove[18] adds intermittent hydronephrosis and mucomembranous enteritis, saying that the latter is rebellious to all medical treatment. Hall[19] thinks that loose kidney often seen in wasting diseases, notably in tuberculosis, and in the old and feeble, should likewise remain unmolested.

Of the radical surgeons, Harris[20] says that when it is decided the symptoms with which a patient suffers are due to the movable kidney, there is little reason to hope for permanent relief by any other method than operative fixation. VanderVeer[21] has great respect for the operation of nephropexy, and states that it is comparatively safe and results in radical comfort and permanent relief. In uncomplicated mobile kidney, which is undoubtedly causing symptoms, chief of which are pain and gastrointestinal troubles, the patients may confidently be advised operation without any previous trial of belts or of rest (Morris, *loc. cit.*). According to Spriggs, cases of true (congenital) floating kidney are never relieved by abdominal bandaging, abdominal supports, or treatment by posture, and when they exhibit symptoms traceable to renal disturbance, they always require nephropexy. So, too, R. T. Morris says that nephropexy is indicated in a large proportion of all the cases of floating kidney. In this connection, compare the statement of Sturmdorf (*vide supra*) that floating (congenital) kidneys are unlikely to give rise to much inconvenience. Albarran (cited by Fischer) thinks that where bandages are of use the operation would be of still more use, for it will not only give the benefit the bandage gives, but will also lend protection against all the complications, which are always possible when wearing a binder.

Operative indications in renal ectopy with psychepathy are well discussed by Piqué[22] who states that hypochondriacs can benefit by intervention, but that hysterical patients should be treated by ordinary therapeutic agents, and that intervention, as in neurasthenics, can lead to hatching of mental troubles, in the form of postoperative psychoses. In certain well-determined forms, however, intervention can bring about disappearance of a preexisting psychosis. It is generally agreed that a loose kidney of long duration, that has given rise to no symptoms, and that has been inadvertently happened upon during the course of a general physical examination, demands no operative interference.

Operation determined upon, what means are at our command to correct this anomaly? The ideal operation should be that procedure which fixes the kidney in a position compatible with physiological activity, comfort, and relief of symptoms, with the least possible injury to the organ. In the evolution of this ideal many ingenious methods have been devised, an exposition of which is given by Morris[23] and by Edebohls.[24]

Nearly all the technics employed have for their object the apposition of the kidney against the posterior abdominal wall, with or without sutures or decapsulation of the capsula propria fibrosa, until adhesions are formed of sufficient strength to hold the organ permanently to the parietes.

Of the two routes by which the kidney may be approached, the posterior or lumbar has found universal favor, the anterior or transperitoneal being employed when a suitable view of an enlarged kidney is desired and the possibility of an eventual extirpation from behind is not to be expected, or if, as a result of kyphosis, the way to the kidney from behind forward is narrow and inconvenient, or if adhesions to be expected between the kidney and other organs are present, or owing to symptoms of incarceration the conditions are not clear (Schmid, cited by Fischer). Of 111 cases of wandering kidney operated on by Riedel[25] 66 only were treated by fixation through a posterior incision; in 41, laparotomy was necessary at the same time or previous to the fixation of the kidney, since the wandering kidney had caused tight adhesions between the intestines, liver, and gallbladder, and the adhesions caused symptoms referable to other conditions. In four cases laparotomy only was performed, the kidney being reposited through the abdomen. In the lumbar route, the incision may be drawn either parallel with the twelfth rib or with the the long axis of the body. Of these, the former is carried from the angle formed by the last rib and the erector spinæ muscle obliquely from above and behind downward and forward to near the brim of the pelvis, dividing the skin, subcutaneous tissue, lumbodorsal fascia, and piercing through between the posterior border of the external and internal oblique muscles on one side, and the quadratus lumborum on the other.[26] The advantages of this method are the greater freedom for a high fixation, especially for suspension from the twelfth rib, and the minor degree of bleeding, since the bloodvessels of this region still follow the metameric type (Küster, cited by Fischer).

The classical vertical incision runs along the outer margin of the erector spinæ muscle from the twelfth rib to the crest of the ilium. "The incision should leave the sheath of the erector spinæ muscle unopened, separating but not severing the fibers of the latissimus dorsi, and deeper down opening the sheath and laying bare the fibers of the quadratus lumborum along the entire extent of its outer margin. Incision or blunt penetration of the transversalis fascia along the direction of its fibers brings us to the fatty capsule of the kidney and completes the approach to the organ" (Edebohls, *loc. cit.*). The advantages of the vertical incision are that injury to the peritoneum is more readily avoided, and that the kidney may be approached more conveniently and in a greater dimension of its longitudinal direction (Neumann, cited by Fischer). Before proceeding further, we should avoid injuring the iliohypogastric nerve which "passes through the upper part of the outer border of the psoas magnus muscle, and runs in the extraperitoneal fat obliquely downward and outward across the front of the quadratus lumborum muscle to the crest of the ilium, where it pierces the transversalis muscle".[27] If the nerve cannot be drawn aside, Edebohls (*loc. cit.*) advises, after dividing it, to reunite the severed ends with catgut after anchoring the kidney and before closing the wound.

Having exposed the kidney by dividing its adipose capsule, by means of which it has been delivered through the wound, before proceeding to anchor it the organ should be carefully examined for any of the possible pathological conditions that frequently are associated with a movable kidney, particularly renal calculus. Ferguson[28] says: "I firmly maintain also that the surgeon's work is not complete without a microscopic examination of a piece from the kidney; it is surprising how often you find the unexpected chronic nephritis." This is objectionable as a routine procedure on the grounds that it is meddlesome surgery, that the ensuing unavoidable hemorrhage would enhance the chances of subsequent infection, and, as Councilman[29] has pointed out, degeneration of the epithelium in cases of diffuse nephritis is often exquisitely focal, affecting groups of tubules, and it is seldom that all parts of the kidney are equally affected. In this way a nephritis may be overlooked entirely, or, if found, a proper estimate of its extent may not be formed, and if the condition cannot be diagnosed by macroscopic or microscopic appearances in addition to symptoms arising from the condition, it is hard to see what benefit the patient can derive from such a procedure so that the end will justify the means.

A simple operative procedure is that employed by Harris,[30] who, using an oblique incision, removes the perirenal fat but carefully preserves the perirenal fascia. "The object of this operation is to so close Gerotta's space and contract the pouch or sac that the kidney will no longer have a free space in which to move. This is accomplished by closing this space from before backward with catgut sutures." Apropos of this, Newman[31] says: "After separating the layer of fat situated behind the kidney, the fascia, when exposed, may be seen as a large fibrous sac, within which the kidney moves freely, only a small quantity of adipose tissue being interposed between it and the surface of the kidney. In such cases. the kidney may be fixed by simply diminishing the size of this sac." The objection to this method and that described by Andrews (cited by Lewis[32]), in which the kidney is suspended by flaps of the fatty capsule and retrorenal fascia, is that logically proposed by Blair[33] who says that we are here using as a means of suspension a tissue that has yielded before, and we have no guarantee that it will not do so again with the recurrence of the predisposing conditions.

Representative of that class of operations in which the true fibrous capsule is split, as well as one of the most universally employed, is that of Edebohls (*loc. cit.*), and the numerous methods of making use of the detached fibrous capsule are described by Edebohls and by H. Morris, as mentioned above. Goelet[34] objects to this method, on the ground that splitting or peeling of the fibrous capsule is both unnecessary and unwise, because just as firm attachment can be secured without such mutilation, and restoration of the kidney to its normal position will, in cases of nephritis due to, or associated with prolapse of the kidney, reestablish normal activity. In a series of studies upon the capsule of the kidney, Emerson[35] concludes that decapsulation of the kidney in healthy animals may, and usually does, cause an interstitial nephritis, and that the ultimate result (12 months) is a newly formed capsule not differing from the original one essentially, except in its tendency to persistent and uneven contraction. No doubt surgeons will hesitate to disturb the true fibrous capsule when a better and simpler method of nephropexy comes into general use.

Representative of that class of operations in which the kidney is suspended from the twelfth rib is the method recently described by Jonescu.[36] The technic is this:—Oblique incision 15–16 cm. long, parallel with and impinging against lower borders of eleventh and twelfth ribs, from 4 cm. posteriorly to anterior end twelfth rib anterior to and alongside of eleventh rib; kidney delivered; capsule split entire length of convex border and folded over to midway between convex border and pelvis; silver wire introduced behind twelfth rib, near its anterior end and carried through folded capsule, renal parenchyma, and opposite side of capsule. and brought out through muscles and skin. The other end of the wire is brought over the kidney and introduced through muscle and skin 1 cm. from the other end, so that the wire loops the kidney. Another wire is introduced in a similar manner, 4 cm. anterior to the first, but encircling eleventh rib. The kidney is reposited, and the wire fastened over gauze roll. The wound is closed by tier sutures of catgut, and the wire removed on eleventh day. Jonescu reports 21 cases, of which one was fatal in 48 hours, of reflex anuria, and at postmortem, bilateral nephritis was found. Mariani[37] resects the twelfth rib, and passes its periosteum across the kidney, thereby holding it in place. This is analogous to the method employed by Fowler,[38] who took a slip from the lumbar muscles, passed it under the lower pole of the kidney, and sutured across to support it. The disadvantages of rib resection are the greater liability to renal hernia, and the danger of injuring the pleura.

If, from the standpoint of trauma, decapsulation of the kidney is objectionable, the passage of sutures or wire through the renal parenchyma is even more so, and is certainly open to criticism. Hamilton[39] says this is unsurgical and absurd; that sutures so passed may injure the organ; may cause bleeding that may result in hematoma hindering primary union and causing sepsis; and that they are bound to cut through when tied. In this connection, witness the hemorrhage from the suture holes in the uterus after myomectomy. Illustrative of injury to the kidney is the case of Clayton–Green[40] in which silkwormgut sutures were passed well into the kidney substance; on the sixth day after operation, a slight leakage of urine (8 to 16 cc. per diem) was found; this appeared to come from the middle of the wound where the deepest suture had been passed into the kidney. Gardner[41] reports three cases followed by true urinary fistula, and says that Albarran (in whose method catgut sutures are passed deeply into the renal parenchyma) reported eight cases followed by "suppurative" fistulas. For those that employ this method, however, Gardner advises that the middle thread of the nephropexy be passed a little above the middle plane of the kidney rather than at the level of this same plane, since the middle calyx is the more vulnerable, horizontal, and is situated on a level with the equator of the kidney, or beneath it. In order to prevent the cutting through of the sutures, Guyon (cited by Fischer) ties knots in the ends of the double sutures at the surface of the kidney, and the production of hematomas may be avoided by the introduction of several drains (Lucas-Championiere, *loc. cit.*). In the case of Langenback (cited by Fischer), there was an embolic infarct of the lower border of the kidney, through which a thread led, which was a fatal suppuration at the point of outlet. According to Newman (*loc. cit.*), gut sutures passed through the kidney become destroyed very rapidly, as the living renal tissue seems to have an unusual power of absorption. Neumann and Wetherill advise against the use of silk, as it is apt to lead to abscesses and to the destruction of the kidney, while Tuffier accuses the silk of giving rise to stone formation (cited by Fischer). The objection to passing silver wire through the kidney is the added laceration of the renal parenchyma that occurs when it is withdrawn. If any suture is to be passed through the substances of the kidney, silkwormgut is the most suitable.

Representative of that class of operations in which the true fibrous capsule is not split, but is transfixed by sutures in such a manner as to suspend the organ, is the method of Brödel.[42] About a year later Goelet[43] proposed a suture similar to that of Brödel, explained the difference between the latter and his variation, and described his technic in detail. The objection to these sutures is that they injure the cortex. Barling (*loc. cit.*) employs Goelet's method, but modifies it by decapsulating the upper half of the kidney to which sutures cannot be applied, believing that this secures firmer adhesions to the upper pole of the organ.

Carwardine[44] freely paints the whole surface of the kidney, except at the hilum, with the strongest, liquid carbolic acid with the idea of supplementing the suspension of the kidney by suture or gauze slings, and procuring rapid formation of granulation tissue. This was also done by Albarran (cited by Fischer), who employed at other times a four percent solution of silver nitrate. Craig[45] employs Carwardine's method in conjunction with that of Goelet. Emerson (*loc. cit.*) says that the results of his experiments suggest that the use of strong antiseptic solutions in the vicinity of a *decapsulated kidney* may do harm by direct absorption into the renal parenchyma. Bassini (cited by Fischer) imitates the posterior surface of the fibrous capsule by an eight percent solution of zinc chlorid.

Representative of that class of operations in which sutures are not employed and the true fibrous capsule is left intact, is the Beyea–Penrose method, in which a rubber tube is placed beneath each pole of the kidney to sustain the organ in place until adhesions form between the true fibrous capsule and the quadratus lumborum muscle.[46] The evolution of this operation is interesting. In 1897, Senn[47] proposed a method in which tamponades were placed around the lower pole of the kidney, leaving the upper free. The objection to this method is this very lack of support to the upper pole, and is illustrated by a case of Gray.[48] This was a patient operated on four years previously, with a return of symptoms in exaggerated form two years later. Reoperation showed the upper three-fourths of the right kidney quite free from adhesions and covered by perinephric fat, while the lower pole was fixed by a dense band of adhesions. While palpating the organ it swung suddenly downward and forward until its upper pole was pointing to the opposite iliac region. Gray concludes by saying: "Avoid use of slings or special supports to lower part of kidney; these produce very strong fixation of lower part, but unless similar fixation of upper part is secured, we see what can happen and what severe symptoms may result." To overcome this fault, Deaver (*loc. cit.*), in 1899, placed a gauze sling around both the upper and lower poles. As the wound was left open, however, requiring a duration of 8 to 10 weeks for the heeling process to be completed, much was left to be desired, and Deaver has long since abandoned this method. Another, and more potent objection, was the extensive, exuberant amount of cicatrization that subsequently took place, causing sufficient pain and pressure changes in the kidney as to demand a secondary nephrectomy. So, in order to employ the same principle, and, at the same time, obtain healing by primary union, the procedure of Beyea and Penrose was devised. A thorough technical description of this operation, together with the points that recommend it, will be found in an article by Beyea, shortly to appear in these columns.

What concerns the position at which the kidney should be fixed, Craig (*loc. cit.*) says that a high position is the only means of giving relief in that class of cases in which intermittent hydronephrosis or other symptoms are due to the flexion of the ureter. Harris (*loc. cit.*) states that the kidney must not be fixed too high, as untoward symptoms may arise therefrom. Taylor[49] reports two cases in which the kidney was fixed too low down in malposition. In Case I, symptoms persisted after nephropexy. The kidney could be readily felt between edge of ribs above and iliac crest below, was firmly fixed and quite immovable; reoperation, fixing kidney in higher position, sufficient to bring about complete cessation of all symptoms. In Case II, dragging pains and frequent micturition due to abnormal mobility of kidney were removed by operation, only to be replaced by chronic pain, like a continuous lumbago, increased by any movement of trunk; loin very tender, condition now declared by patient to be of far greater inconvenience than original pain; this was also remedied by refixing kidney in good position.

Goelet[50] details 17 essential reasons for failure after nephropexy, and why symptoms after operation may persist or recur is stated by Taylor (*loc. cit.*).

As to nephrectomy, which was the only operative procedure for movable kidney in vogue up to the time of Hahn, in 1881, Newman (*loc. cit.*) states that extirpation is only permissible where nephrorrhaphy has failed, and when the patient's life is still seriously threatened; when the movable kidney is diseased and the fixed kidney healthy.

The complications of movable kidney may be either extrinsic or intrinsic, and have been discussed under semeiology and pathology; of these, the extrinsic are by far the more frequent. Eichhorst[51] states that wandering kidney favors the formation of gallstones by obstruction to the discharge of bile, and Beckett[52] found a distended gallbladder, from which 17 large stones were removed; the gallbladder was drained through the lumbar incision. Uremia, as a complication, appeared in two cases mentioned by Eichhorst (*loc. cit.*); both cases were fatal from pressure of a wandering kidney upon both ureters. Abortion has repeatedly taken place in movable kidney. Most of the post-operative complications have been mentioned. Edebohls (*loc. cit.*) found on record nine cases of lumbar hernia following nephropexy; in five there was a hernia of the kidney itself.

The prognosis, in uncomplicated cases, is uniformly good. It must not be forgotten that mechanical appliances usually only give relief from symptoms, and exceptionally may effect a cure. Thorndike and Crandon (*loc. cit.*) state that prognosis after an operation which is technically proper, is for perfect cure. Edebohls (*loc. cit.*) gives a table of a total of 846 operations with 14 deaths, a mortality of 1.65 percent.

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THE SERUM TREATMENT IN EXOPHTHALMIC GOITER.

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Early in the last century, at approximately the same time, four men described that symptom-complex now known to most Americans as exophthalmic goiter. Parry wrote in 1825, Flajani an inaccurate and incomplete account perhaps a trifle earlier, and a few years later, Graves and Basedow. Treatment in this condition has always been wide and varied, the results the same, alike, however, in the one respect, of never being very satisfactory; in most cases rest in bed has accomplished a good deal, in a few fulminating cases nothing has been able to check the progress of the disease which has gone on to a fatal ending. Heart depressants and heart stimulants, hydrotherapy and electrotherapy, and innumerable single drugs, supposed by each eager advocate to have a specific action in this condition, have in turn been tried and found wanting. The entire matter seems at present to be in a sort of medical chaos; the only ray of light, the present attempts to find a specific serum for this disease.

Moebius, in 1886, was probably the first to connect definitely this disease with some disorder of the thyroid gland, according to him it was a "thyroid neurosis;" in this he is supported by Otto Lanz, of Amsterdam, who has done much work on this subject. Before this time one theory after another had been set up and in turn had been cast aside to give place to a newer and more promising one. Basedow's original idea that it was due to a peculiar blood condition, a chlorotic anemia, was followed by another, that it was a disturbance of the medulla, or later a disorder of the sympathetic; this last has ardent supporters even now. That the whole thing is a disturbance of the secretory activity of the thyroid gland, as suggested by Moebius, is at present generally accepted, but it is by no means agreed upon as to exactly what sort of a disturbance it is. Many are the exponents, particularly among the French, that it is a hypothyroidazation; their patients are in consequence given thyroid extract alone; some favorable results are reported, but in such few cases that are given in detail, not only is the diagnosis somewhat in doubt, but, furthermore, the socalled improvement seems to consist largely in a decrease in size in the goiter, with very little or no alleviation of the other symptoms. German investigators, Burghart, Lanz, and others, attribute any improvement which may take place under this treatment to suggestion, and to that which would naturally occur from rest in bed alone.

Gley and Moussu, in France, and Eulenberg, of Berlin, believe that the parathyroid glands play an active part in the disease. Sandatrom, in 1880, discovered the parathyroid glands; Gley, in 1892, and recently Jeandelize, have written on this subject and detailed the difference in results in animal experiments in removing thyroid or parathyroid glands. Moussu fed one patient with exophthalmic goiter on the parathyroids of a cow with marked improvement but unfortunately the patient died of pulmonary tuberculosis during the treatment. MacCullum reports a case in which he fed the patient on a cow's parathyroids but as yet he has had no remarkable results. Very recently the investigations of Milton and Portis and of MacCullum, of this country, on parathyroids and the action of serum obtained from animals rendered immune to large doses of parathyroid substance have thrown new light on this aspect of the subject but also have added more or less to the confusion already present in that, whereas before it was considered that we were dealing with the effects of an abnormal activity of the thyroid alone, we now must consider how much, in certain cases, does the parathyroid enter into the symptom-complex of the disease. The foregoing writers proved that in animal experiments at least, removal of the parathyroids caused acute symptoms, tetany, convulsions and death, while after taking out the thyroid, and leaving the parathyroid still in place a train of chronic symptoms resulted, finally ending in death. As it is only comparatively recently that clear distinction has been made between these two glands, it is very probable that most of the serums now used are obtained after the removal of parathyroids as well as thyroids, or part at least of the former, and that some of the strangely varying results after treatment by these serums are due to these two factors: First, the relative parts played in each individual disease by thyroid and parathyroid, and, second, the relative amounts of the two gland substances used in making the serum.

Roberts, an English writer, sees a definite connection between the disorders of the thyroid gland and the female genital organs, believing that the thyroid is irritated to abnormal activity by an ovarian secretion. He fed his female patients on didymin and testiculin and reports good results in 18 cases.

In 1886, Moebius, and soon after, Enriquez and Ballet in Paris, Lanz in Amsterdam, and Goebel in Germany, called attention to the direct antithesis between the two conditions, myxedema and exophthalmic goiter, and the idea at once suggested itself of endeavoring in treating Basedow's disease either to diminish or to antagonize directly the thyroid secretion. Immediately, under the leadership of Kocher of Berne, an army of surgeons began operating, removing a part or all of the thyroid gland with a few striking successes but many less favorable results. Excessive hemorrhage, acute thyroidization and sudden death have thrown this surgical treatment into disfavor, in this country at least. This left no other alternative but to try in some other way to antagonize directly the thyroid secretion.

Enriquez and Ballet were the pioneers in this work. In 1875 they fed dogs with large and increasing doses of thyroid substance, thereby causing in them definite symptoms resembling those of exophthalmic goiter, enlarged thyroid, exophthalmos, tachycardia, sweating and diarrhea; following along these lines, they took the blood of thyroidectomized dogs and injected it into patients suffering with Graves' disease with good results. Their cases are not reported in detail. In 1903 they give a somewhat discouraging report of these cases; the dogs from which the serum was obtained could not be kept alive; thyroidectomized goats were hard to keep lactating and in good condition, and their patients suffered various untoward effects. Four years later, in 1899, Otto Lanz completed some experiments along this same line; he preferred to use, on account of the greater simplicity of the method, the milk of thyroidectomized goats. He reports in detail six cases covering a period of four years in which he has used this method of treatment with marked improvement. At about the same time Burghart, of Berlin, having obtained no satisfaction with previous methods of treatment in this condition, treated three patients having exophthalmic goiter with blood obtained from a myxedematous patient; later he used the blood of thyroidectomized dogs. His results are fairly satisfactory.

Moebius, prominent along this line, in 1901 had some standard serum prepared by Merck of Darmstadt, from the blood of thyroidectomized goats. This he used at first subcutaneously, later by mouth. He reports two cases. His chief objection to the serum which bears his name is its high price. Schultes, in 1902, reports in detail a case in which this serum was used with most striking and apparently permanent results. Goebel, in 1902, used the milk of a thyroidectomized goat in the case he reports with startling success. Kuhnemann is the originator of another wellknown preparation (rodagen), made from the dried alcoholic precipitate of thyroidectomized goats' milk. This is said to have an agreeable taste quite different in this respect from other serums. Reports from patients in this country who have taken rodagen are not so satisfactory. They say it is nauseous in the extreme. Kuhnemann reports one case in detail.

G. R. Murray, who is almost the only Englishman to report work along this line, while aiming at the same thing, prepares his serum in quite a different way from German investigators. Instead of removing the thyroid and thereby causing a condition of operative myxedema, by gradually increasing doses of thyroid extract, he immunized his animals, hares and rabbits, to large amounts of this substance, and after a month or so collected the serum expecting to find in it the socalled antibodies which would antagonize the hyperthyroid secretion in an exophthalmic goiter patient. In the two cases he reports he is not enthusiastic over his results, but lays the blame on the small dosage used and the small size of the animals from which the serum was obtained; he believes firmly in the correctness of the theory involved, and with larger doses of a stronger serum, he confidently expects better results. He has also tried the Moebius serum with about the same results as with his own. In January, 1905, Hempel and Thieniger reported five cases. Thieniger used Moebius serum in four cases, Hempel the same preparation in one case which he reports in detail. The results in these last five cases are on the whole very satisfactory.

Recently in America a new preparation, thyroidectin, has been put on the market. This is in capsule form and is obtained from the dried blood of thyroidectomized animals and not from the serum alone. It is described as a nontoxic, nonirritating, soluble red powder in 5 gr. capsules, half to be given daily. G. Christian has treated 18 patients with this, "all considerably benefited."

Date.	Cases Reported by	Method of Treatment Kind of Serum Used.	Previous Duration of Disease.	Sex.	Age.	Gain in Weight.	Pulse Before.	Pulse After.	Time Under Treatment.	Change in Goiter.	Number of Cases.	Change in Exophthalmos and other Symptoms.	End Results of Cases.
1895	Enriques,	Thyroidectomized Dog's Blood,									9	Relieved	In 1903 the writers say that the end results are disappointing.
1899	Lanz,	Thyroidectomized Goat's Milk,					90	70	2 weeks	Less	1		General condition very much improved.
	"	Thyroidectomized Goat's Milk, 2 cups daily,					134	88	9 weeks	"	1		Very much benefited.
1903	"	Thyroidectomized Goat's Milk,		F		14 Kg.	150	80	3 months	Same	1		Feels completely cured.
"	"	Thyroidectomized Goat's Milk, 1 liter daily,	3 mos.	F		10 lbs.	130	80	3 months	Less	1	Less	Was bedridden before; now is able to be up and at work.
"	"	Thyroidectomized Goat's Milk, 1 liter daily,		F			130	60	3 months	Less	1		Much better. Able to go through childbirth without trouble.
"	"	Thyroidectomized Goat's Milk,	1 yr.	F	25				3 months		1		Great improvement.
1899	Burghart,	Myxedema Patient's Blood, 250 cc. S. C.							8 weeks		3		A gain in weight and remission of symptoms but can call no case a cure.
1901	Moebius,	Moebius Serum,	4 yrs.				134	110	52 days	Less	1		In both of these cases there was marked alleviation of all symptoms.
"	"	Moebius Serum,	2 yrs.				120	90	3 months	"	1		
1902	Schultes,	Moebius Serum,	3 yrs.	F	45		240	90	1½ months	"	1		General and mental symptoms much improved.
1902	Goebel,	Thyroidectomized Goat's Milk,	10 yrs.	F	36				A few weeks	"	1	Less	Bedridden before, now able to walk a mile without fatigue.
1904	Kuhnemann,	Rodagen 6 Grains,	6 wks.	F	19	12 lbs.	140	90	1 month	Gone	1	Gone	Reports later as completely cured. Had tried all other methods of treatment.
1904	Murray,	His Own Serum,	18 mos.	F	20				2 months		1	Slight Change	
"	"	" " "	5 yrs.	F	19	0	P.	Lower	3 weeks		1		Moderately good results in both cases but not sure it is due to serum.
1905	Thieniger,	Moebius Serum,		M	boy	0	Not Lower	"		0	1	Better	No change on large doses.
"	"	" "		F			"		2 months	Less	1	"	Improved in every way.
"	"	" "					"			"	1	"	A general improvement.
			5 dys.						2 weeks	"	1	"	An acute case apparently saved from death by means of the serum.
1905	Hempel,	" "	6 wks.	F	55		135	96	1 month	"	1		Improved greatly in every way.
1904	Moussu,	Parathyroids of a Cow,									1		Gained but died later of tuberculosis.
1905	Macullum,	Parathyroids of a Cow,									1		No remarkable results as yet.
1905	Roberts,	Testiculin,									5		Marked improvement.
1905	Christian,	Thyroidectin,									18		All considerably benefited.
1905	Kuh,	Moebius Serum,									1		An excellent palliative but cannot speak as yet as to the permanent results.
"	Kuh,	Thyroidectin,									10		
"	Mix,	Moebius Serum,				40 lbs.	120	90	A considerable per.		1		Was bedridden, now is able to work.
"	Mix,	Moebius Serum,				20 lbs.			A considerable per.		1		Able to work with a complete disappearance of all symptoms.
"	Rydel,	Rodagen,									4		A slight improvement but is not sure that it is a result of the serum.
"	Sigel,	Rodagen,				0			3 months	0	2		No gain whatsoever.
"	Ewald,	"							Several weeks		2		No result.
1903	Adam,	Moebius Serum,	3 yrs.						1 month		1		Was unable to work but now has been working for six months. "Cured."
1903	Kirnberger,	Rodagen,									2		In both of these cases there was a disappearance of all acute symptoms and a marked general improvement.
1905	Peters,	Moebius Serum,									1		Good effect.
1904	E von Leyden,	" "	3 yrs.			3 lbs.	96	80			1		Marked improvement.
"	" "	" "	2 yrs.	F	37						1		Feels very much better.
1904	Sainton,	Thyroidectomized Sheep Blood-serum,							1½ years		1		Cured in one and one-half years.
				F	35		115	80	8 months		1		Patient absolutely transformed into a new and healthy woman. Cured.
"	"	Thyroidectomized Sheep Blood-serum,		M	31		120	100	6 months		1		A great improvement but has to take the serum right along.
"	"	Thyroidectomized Sheep Blood-serum,	3 yrs.	F	51		134	84	21 days		1		Entirely cured but has to continue the serum.

Kuh treated 11 patients with serum, one patient with Moebius serum, and the other ten with thyroidectin. While he cannot yet speak of its permanent results, he considers it an excellent palliative, and finds that the subjective symptoms rapidly improved, the pulse lowered and appetite increased. In one severe case after a course of this treatment, the patient has been without serum for two and one-half years and is still in excellent health.

Mix reports two very striking results of the use of the serum in small doses over a considerable length of time. Both were severe cases, the patients being confined to bed, with marked cardiac symptoms; one gained 40 pounds with a drop in pulse from 120 to 90 and is now able to work; the other gained 20 pounds and is now working with "a complete disappearance of all symptoms."

Rydel treated four patients without marked improvement. He does not believe that the theory on which this therapy is based has been proved, or else the doses given are far too small. He used rodagen. As one-half liter of thyroidectomized goats' milk equals 125 grams of rodagen, a dose of 5–10 grams a day is manifestly too little.

Van Voss believes in the serum treatment but finds it too expensive to be of much value for general use.

Sigel reports four cases, two of his own and two of Ewalds' in which he has had absolutely no favorable results. Such reports as this, however, are rare. Adams has apparently obtained a cure in his case which had proved intractable to every other form of treatment. Kirnbirger uses sodium sulfonate to counteract the iodin secretion of the thyroid along with rodagen with very favorable results. Rosenfield reports in detail the case of a patient who was much benefited by five grams of Moebius serum a day. Peters has used with good effect a combination of rodagen with Moebius serum. E. V. Leyden, after trying Moebius serum, rodagen, and a serum prepared in the Serum Institute of Copenhagen now uses rodagen and reports excellent results in three cases. Sainton and Pisante used the blood of a thyroidectomized sheep in three cases with very great improvement.

The table on page 417 gives in detail the cases reported up to date.

The reports and the results of treatment in these cases are on the whole rather unsatisfactory; out of the entire number less than a third give sufficient details to be of any value; of this number only a few give complete data on which conclusions can be based. Taking them as they are, however, certain facts are evident.

(1) The serum treatment of exophthalmic goiter is as yet very unsatisfactory, quite as much so as any other method now used, but (2) it gives promise after more careful study of excellent results; (3) it is evident that the best results can only be obtained with large doses over a long period of time, as, in the foregoing cases, by far the most striking and lasting effects of treatment were when the patient was given a thyroidectomized goat and drank ½ to 2 liters of milk a day for two or three months and longer instead of taking 50 to 100 grams of serum in all for a period of weeks; (4) the entire subject is still in its infancy and until larger doses of a more powerful preparation are given results will continue to be slow and uncertain.

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MISCELLANEOUS.

THE AMERICAN PHARMACOLOGIC SOCIETY AND THE WORKING-BULLETIN SYSTEM FOR THE COLLECTIVE INVESTIGATION AND CLASSIFICATION OF THE NEWER MATERIA MEDICA.

Organization of the American Pharmacologic Society.

The American Pharmacologic Society was organized at the Hotel Astor, New York City, October 21, 1905. Reynold Webb Wilcox, M. D., LL. D., was elected president, and F. E. Stewart, M. D., Ph. D., secretary. Resolutions setting forth the purpose of the organization were read and approved. For these resolutions see page 439.

Origin and History of the American Pharmacologic Society.

The original plan, upon which the present plan is based, was suggested to the Smithsonian Institution in 1881, and indorsed by the Honorable Secretary, Prof. Spencer F. Braid, also indorsed by the Surgeons-General of the Army (Barnes), Navy (Wales) and the Marine-Hospital Service (Hamilton); also by the Alumni Association of the Philadelphia College of Pharmacy (1883); was favorably received and discussed by the Philadelphia County Medical Society (1884); also by the Ninth International Medical Congress (1887); endorsed editorially by the *Journal of the American Medical Association* (1901); favorably received by the American Therapeutic Society (1901); and referred to a committee; and, later, a joint committee was appointed by the American Medical Association and American Pharmaceutical Association, for its elaboration. This committee omitted the working-bulletin system, an essential feature of Dr. Stewart's original plan suggested by Professor Spencer F. Baird, and accented the feature of standardization. As thus developed, the plan appeared, further modified, as the Council on Pharmacy and Chemistry of the American Medical Association, which Council is now in operation.

When the Council on Pharmacy and Chemistry was organized, its modification of the original plan also failed to include the working-bulletin system suggested by Professor Baird. This system of collective investigation, which includes the obtaining and classification of knowledge of materia medica from every point of view, is the essential feature of the original plan; the obtaining of this information brings together and harmonizes the professional, commercial and scientific factors dealing with the materia medica.

The plans were carefully considered by the Society, and it was

Resolved, That the manufacturing houses engaged in the materia medica supply business be invited to affiliate with the Society, for the purpose of investigating and classifying the newer materia medica by means of the working-bulletin system.

It was then decided not to adopt the original Constitution and By-Laws, but to develop the same by operating its provisions and modifying its requirements to meet conditions arising therefrom. It was deemed advisable not to invite a large membership until the plan had been sufficiently worked and exhaustively discussed, to ascertain whether it could be made practical.

For the purpose of putting the plan of the Society into practical operation it was deemed expedient to take up some wellknown product on the market, submit the claims made by the manufacturer to verification, and issue a working-bulletin for its collective investigation. Only by this method could its practicability be determined. The H. K. Mulford Company submitted "Somnos" as the first product to be tested.

STATEMENT OF THE H. K. MULFORD COMPANY REGARDING SOMNOS.

The Society was informed by the H. K. Mulford Company that "Somnos" is the word-mark chosen to distinguish their brand of an elixir of a synthetic chemical, chloræthanal alcoholate, presented to their notice by Drs. Barnes and Hille, experts engaged in original research in their laboratory at the time of its introduction to commerce, that previous to its introduction physiological and chemical experiments had been conducted justifying its introduction; that subsequently the physiological views had been verified in part by Colin Campbell Stewart, Ph. D., at the University of Pennsylvania, and in part by William H. Lippert, M. D., in the laboratory of the same institution, and that "Somnos" had been extensively prescribed by physicians throughout the world for at least six years without any reports of untoward effects appearing in the medical journals.

For the purpose of verifying the report of the H. K. Mulford Company's chief chemist, regarding the chemical nature of the product, the Society employed Professor Samuel P. Sadtler, Ph. D., LL. D., the chemical editor of the United States Dispensatory, and a member of the Revision Committee of the United States Pharmacopeia, an acknowledged authority throughout the chemical, pharmaceutical and medical world. His report demonstrated the product to be a definite chemical compound of chloral and glycerin referred to by Henry in 1874, which product, according to Professor Sadtler, should be known as Trichlorethidene Propenyl Ether, rather than by the older and now obsolete name, chloræthanal alcoholate. (See Professor Sadtler's report in this bulletin, p. 431.)

The Society employed Colin C. Stewart, Ph. D., Associate Professor of Physiology, Dartmouth Medical College, to determine the lethal dose of Trichlorethidene Propenyl Ether in the form of the elixir, Somnos.

Dr. Stewart had, at the request of the H. K. Mulford Company, studied the physiological action of the drug upon heart, circulation, and respiration, with the understanding that his report was to be filed without publication. Dr. Stewart's reports to the Society, however, embody both the earlier work upon the physiological action of Trichlorethidene Propenyl Ether on heart, circulation and respiration, and the work done to determine the lethal dose.

Professor Reynold Webb Wilcox, M. D., LL. D., was engaged to conduct the therapeutic investigation. The works of this wellknown author of textbooks on materia medica, pharmacology, and therapeutics are accepted as authoritative.

REPORT ON "SOMNOS" BY THE COUNCIL OF PHARMACY AND CHEMISTRY.

A report emanating from a subcommittee appointed by the Council on Pharmacy and Chemistry of the American Medical Association was published in the *Journal of the American Medical Association* for September 15, 1906.

As a contribution to the collective investigation which the Society has undertaken, this report would be welcomed if the results of the experiments of the committee had been made scientifically available by a publication of the names of the investigators and the methods by which these results were obtained. It is hoped this information will be forthcoming before the time arrives for the publication of the next edition of this bulletin.

FURTHER INVESTIGATIONS.

The next step of The American Pharmacologic Society for the collective investigation of Elixir Trichlorethidene Propenyl Ether (Somnos) is to send the bulletin to hospitals and physicians in private practice who have used "Somnos" during the past six or eight years, and publish their results in subsequent editions of the bulletin.

From the evidence accumulated, there is no reason to modify the claims made by the manufacturers any further than exemplified in their statement under "Dosage" in the edition of the bulletin dated October, 1906. Since the plan of the Society is progressive, it provides for publication of later data.

All literature issued by the manufacturer in any way referring to "Somnos" will bear the date of the working-bulletin on which it is founded, thus enabling the profession to keep in touch with the progress of the collective investigation. All other literature, in accordance with the By-Laws of the Society, will have incorporated with it the statement of the manufacturers appearing in this bulletin.

The working-bulletins and the Constitution and By-Laws, as now developed, are on file and copies may be obtained by the profession at any time by applying to Mr. George H. Hitchcock, Chairman of the Committee on Permanent Organization, Sixth avenue and 58th street, New York City.

WORKING-BULLETIN NO. 1 FOR THE COLLECTIVE INVESTIGATION OF TRICHLORETHIDENE PROPENYL ETHER.

Therapeutic Properties of Trichlorethidene Propenyl Ether Including a Review of Various Hypnotics.

BY

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In 1897, in speaking upon the "Treatment of Insomnia," before the Section on Pharmacology and Therapeutics of the British Medical Association, at Montreal, I emphasized the fact that insomnia is a symptom of many and varied conditions. The first essential is to obviate these conditions—this often requires much investigation and study. If this can be done, chemical hypnotics are indicated to change the habit of sleeplessness into the habit of sleeping. If the conditions are irremediable, then a hypnotic is essential as an adjuvant to other remedies designed to improve these pathological states. If pain, another symptom, is present, a narcotic, not a hypnotic, is demanded. The mistake of administering a narcotic when a hypnotic only is required, should not be made. Sleep is essential that the human organism may perfectly perform its normal functions and continue to exist. Wherever possible, physical measures should be at first employed; hygiene, regulation of diet, hydrotherapy, electricity, massage—any or all may be useful; in mild instances, indeed, may be all that is necessary, but every experienced practitioner knows that they often fail, even when applied by experts. Their failures embrace the larger number of patients who come to the internalist to obtain relief through drug therapeutics.

When it has been decided that all causative conditions have been removed or palliated so much as is possible, and the various physical measures have been skilfully applied and found wanting, then recourse must be had to drugs. Here it is not the sleep-compelling, but the sleep-persuading remedies that are necessary, and only that amount of the drug which shall accomplish the object and no more, is the one that is needed. The accepted theory of drug action in the line of hypnotics is that based on the neurons, and the working out of any practical hypnotic must take into account this theory, and in a general way it may be said that the alcoholic radicles, of which methyl (CH_3) and ethyl (C_2H_5) are familiar examples, depress the functions of the higher cerebral centers, and that chlorin (Cl) among the elements depresses those of the lower centers. Since by synthesis carbon radicles can be brought practically into almost any combination, the possibility of working out a theoretical hypnotic is assured. However, the only test of its efficiency is the therapeutic one, and if this is confirmatory, then practice has a good working theory as a basis.

In the study of a new hypnotic recourse is usually had to a hypnotic of recognized certain qualities and definite effects. Therefore, hydrated chloral is usually taken as a type of sleep-producing drugs, as digitalis is for drugs acting upon the heart. In a remedy which has a potent influence for good, we are likely to find also untoward or even poisonous results; therefore, other remedies acting similarly are studied in an effort to ascertain if the same results can be obtained, but without incurring the dangers which we have learned to recognize. Yet in these studies we take the known and certain therapeutic effects as a standard and first determine if the drug in question can produce these effects. This question having been answered in the affirmative, the next problem is to determine its harmlessness as compared with the remedy adopted as the standard. If the drug under investigation is equally effective, but possesses fewer or less marked untoward results of administration, a distinct progress in therapeutics has been gained.

In the study of hypnotics, hydrated chloral, commonly called chloral, is the standard adopted, so far as effectiveness is considered. Its widespread use since 1869 has given abundant opportunity for accurate and complete knowledge concerning the result of its administration, whether they be therapeutic or toxic. Practically, it produces nearly normal sleep, slowing the pulse and respiration somewhat, and lowering the temperature slightly. It contracts the pupils, produces some conjunctival congestion and edema of the eyelids. If a lethal dose is taken, the fatal result is caused by respiratory failure, mostly, but associated with cardiac paralysis, and the latter is especially frequent in fatty degeneration of the heart. If the chloral habit is formed, we may expect mental hebetude, hallucinations, insanity, particularly of the emotional variety, loss of memory and extreme physical prostration.

The untoward effects on the circulatory and respiratory apparatus, with the great likelihood of the formation of the habit with its resultant mental and physical degeneration, and finally death, are practically prohibitory of the use of chloral for any variety of insomnia when prolonged use may be required.

Various substitutes have been offered, and these will be briefly considered.

Amylene-chloral, known commercially as *dormiol*, is a far less certain hypnotic, and differs only in its untoward effects in degree, but not in kind. It is simply a less harmful chloral.

Chloralformamid, known as *chloralamid*, is nearly as efficient (3 to 2) as chloral as a hypnotic, On account of the rather widespread practice of administering it in an alcoholic menstruum, it is not so depressing to the heart, a habit is not so easily formed with its serious consequences, but it does with some frequency lead to a habit formation, and the results are not distinguishable from those of its parent substance.

Anhydrogluco-chloral, known as *chloralose*, has been used since 1889, and was supposed to be safer than chloral because of its lessened depression of the spinal cord, but while its hypnotic properties diminished during continued use, its dangerous effects are more pronounced. It is to be noticed that the dose is about one-half that of chloral, but its action is extremely irregular.

Butyl-chloral is apparently a more effective hypnotic than chloral, for it is useful in the presence of pain, but it is indubitably poisonous even in moderate doses.

Ethylated chloral-urethane, known as *somnal*, probably a solution of chloral-urethane in alcohol, is almost as reliable in action, but quite as unsatisfactory as chloral in its end-results.

Chloral-urethane, commercially known as *uraline*, is a compound of urethane and hydrated chloral, and therapeutically is chloral with all its disadvantages.

Tri-chlortertiary-butyl alcohol, known as *chloretone* or *aneson*, is not only a hypnotic, but a local anesthetic. It is not quite so surely effective as chloral, but, on the other hand, not nearly so toxic, nor is habit so readily formed.

Chloral-ammonia apparently possesses no advantages over chloral.

Antipyrine-monochloral, known to the trade as *hypnal*, is very uncertain in its action, and while it does not produce marked untoward results, it also is not an efficient hypnotic.

Trichlor-isopropylic alcohol, known as *isopral*, is decidedly volatile, even at ordinary temperatures, and difficult to administer because of its acrid taste. It is not nearly so effectual as chloral, habituation is readily established and it disorders digestion.

In all the halogen (particularly the chlorin) derivatives of alcohol or combinations of these with other substances of known or supposed hypnotic power which have been hitherto considered, it is apparent that the toxicity is demonstrable whenever chlorin atoms are found in the formula and within limits increases with the number of atoms.

Notwithstanding the efficiency of chlorin compounds as hypnotics, their disadvantages as regards habituation, production of untoward symptoms and physical deterioration were so great that efforts have been made among the alcohols to find a satisfactory remedy.

Amylene hydrate, chemically tertiary amylic alcohol, is fairly efficient, but soon loses its effect, is apt to disagree with the stomach and is useful only for brief periods.

Of the aldehyds, paraldehyd alone has been in vogue. It is a powerful and safe hypnotic, without unpleasant after-effects for short periods of time, but it impairs digestion after a few days, its continued use produces an abominable odor to the breath, habit is formed, and even symptoms resembling those of delirium tremens may supervene. The results of observation show that neither to the alcohol nor to the aldehyds, may we look for a satisfactory hypnotic.

Of the methanes, sulphonmethane, known as *sulphonal*, was first introduced; later came sulphonethylmethane or *trional*, and still later *tetronal*, but the last of limited use. The methanes have been extensively used, especially by the laity. They are decidedly insoluble, and therefore their effects are slow in appearing, and even more slowly disappear. Sleep is quite likely to supervene on the day following the evening administration, and it is at times rather a mental hebetude than refreshing slumber. Sulphonal has produced several fatal results, not only from an enormous single dose, but as well from long-continued use of small daily doses. Hematoporphyrinuria occurs from both with all the concomitant symptoms of physical disaster. To be sure, the number of cases is small when one considers the widespread use of these drugs, but they cannot be avoided, even if all precautions have been taken. Seven such cases have come under my observation within the past ten years. In one, peripheral neuritis was found, which required nearly six months' treatment to cure. Here fifteen grains of trional had been taken each night for nearly a year.

The ureas have of late possessed considerable interest. Ethyl carbamid, known commonly as *urethane*, is useful chiefly when the sleeplessness is a matter of habit; it generally fails in obstinate cases, and when its use must be continued.

Methyl propylcarbinol-urethane, known commercially as *hedenal*, is a prompt and fairly efficient hypnotic, but is decidedly less powerful than chloral or trional. Patients, however, readily become habituated to it, and for that reason it is only of temporary usefulness.

Phenyl-urethane, known as *euphorin*, seems to be a therapeutic failure. A limited experience found it of little utility.

Diethylmalonyl urea, known as *veronal*, is a recent aspirant for favor. It is certainly a sure hypnotic, and, in large doses, useful even in some of the psychoses. In its slow action, deferred sleep and untoward effects, it resembles trional. In spite of all care it has twice produced hematoporphyrinuria under my observation. Untoward symptoms are by no means common, and fatal results are beginning to be reported.

From this brief summary of the results of the therapeutic use of the various hypnotics, it can be seen that the chlorin-containing drugs are by far the more efficient; that in a general way they more readily cause habits; and, finally, that they have deleterious effects upon the organism. The alcohols are inefficient, and the aldehyds have all the disadvantages of the chlorals without their certitude of action. The sulphon compounds are tardy and untimely in action, are dangerous for prolonged use, without being so efficient as chloral. The ureas possess about the same disadvantages.

Believing that the most efficient hypnotic must be one containing chlorin and approaching chloral in type, a series of experiments has been undertaken to produce a new substance which should approach chloral in a therapeutic way, but without its toxicology, and without danger of habit formation.

The following is intended to be a fair statement of the results thus far obtained: Since

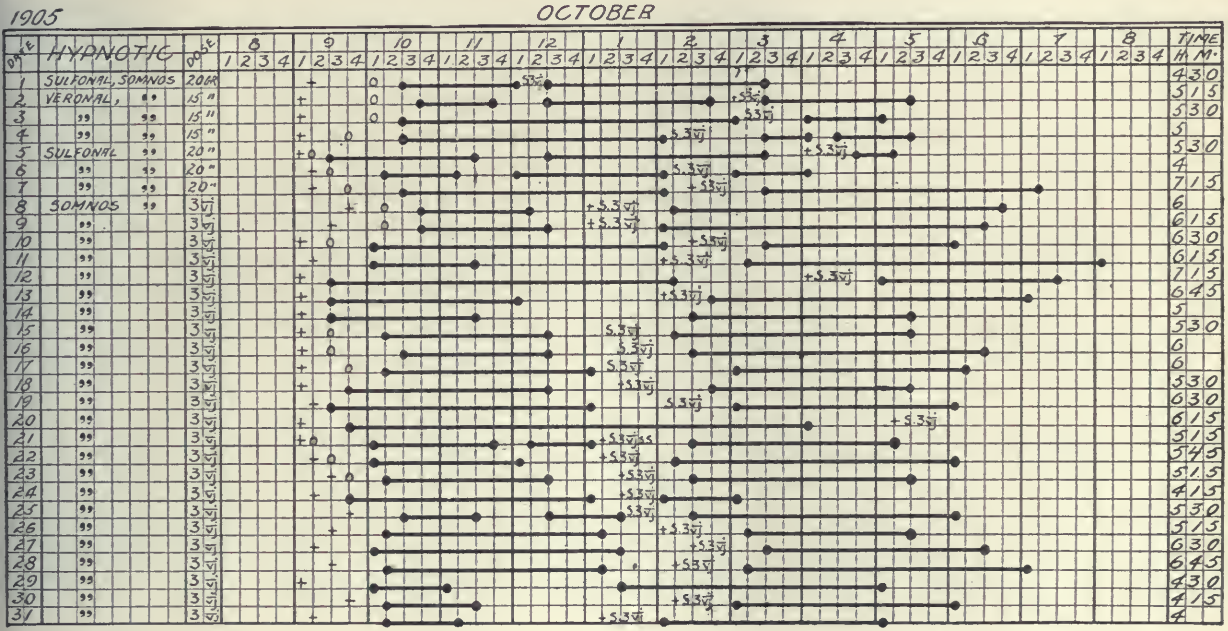
May, 1904, I have employed Trichlorethidene Propenyl Ether, known as *Somnos*, in the treatment of 72 patients suffering from insomnia of varied causation. I have generally administered it in a tablespoonful dose in matzoon, one-half hour before sleep is desired, and should the patient awaken before 2 a. m., a second dose is given. Most of these patients were either women of unstable nervous organization, upon whom the demands of society, the wear of superintendence of domestics, or the *Sturm and Drang* of modern existence have laid their mark. In many of these a single dose makes the difference between a restful night and calm awakening or a disturbed and interrupted slumber, followed by morning exhaustion. In many instances, men of affairs, whose daily routine follows them to bed and continues far into the night, have found nights made for sleep and that sleep restful. This remedy has enabled them to close their work with their desk and find their work and their health the gainers.

In hysteria, the paroxysm already under way is checked before the outbreak is pronounced and control is lost. In all these conditions the *non nocere* must be carefully considered in the choice of a remedy.

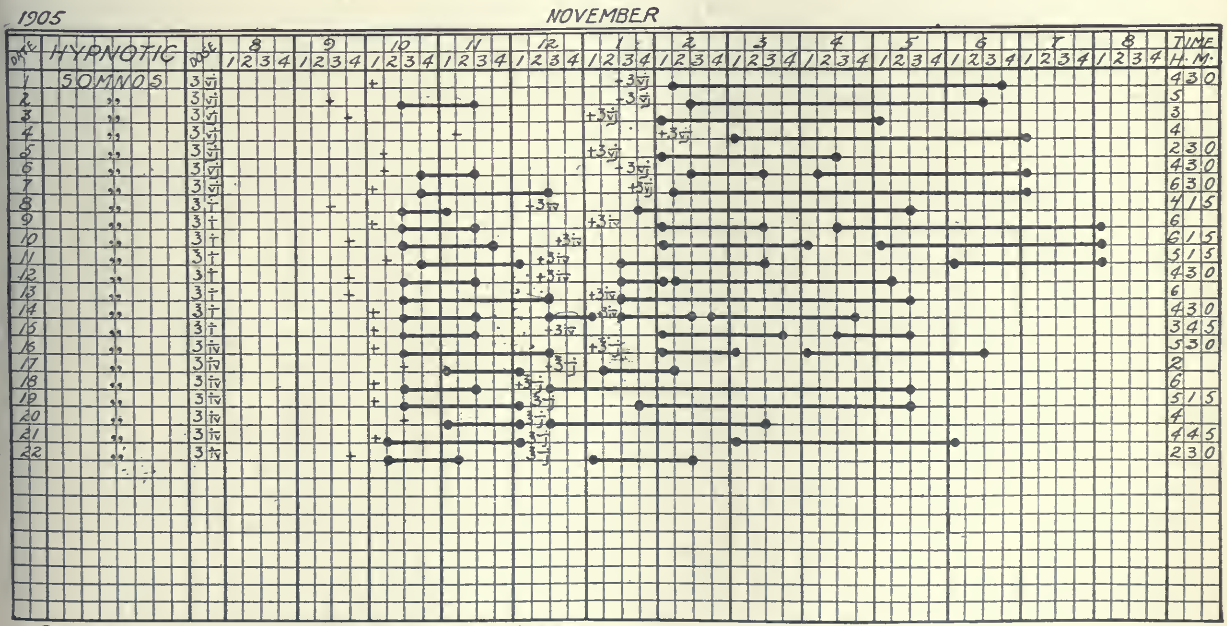
In grave physical conditions, of which insomnia is a symptom and an urgent one, as, for example, in the albuminuria of pregnancy and resulting puerperal mania, excellent results have been obtained in instances of great gravity. In cardiac disease it has been safely administered, converting the nights of orthopnea and horror into those which aid in obtaining therapeutic results from indicated cardiac remedies. In the last stages of pulmonary tuberculosis, ineffective cough is lessened and rest aided, and that, without fear of depression, neither here nor in instances of cardiac disease. In arteriosclerosis, more especially of the renal type, socalled chronic interstitial nephritis, the morning asthmatic attack may be frequently avoided by a midnight dose of the remedy. When we recognize that in all these cases no ill-effects need be feared from the heart, lungs or kidneys, we not only have added much to the comfort of the patient, but have relieved ourselves of the anxiety which we feel when administering powerful depressants to persons suffering from severe organic disease. Especially is this true if we must continue with a symptomatic remedy for considerable periods of time. We should be certain that there is practically no effect on red blood cells, in marked contrast to what sulphonal, paraldehyd, trional and chloral—citing them in order of deleterious influence, the most potent first—after prolonged usage, are known to result in. Safety, uniform reliability and absence of unpleasant awakenings, are strong arguments in favor of a hypnotic.

The history of one patient is cited *in extenso*. A gentleman, retired from business, 69 years old, had undergone disturbed nights for four years because of the illness of his wife, who had been paralyzed as the result of hemorrhage into her left internal capsule. After her death the habit of sleeplessness continued, maintained probably by grief and loneliness occasioned by the loss of a life-long partner. Physical measures, baths, massage, electricity, diet, exercise, all under the direction of those skilled in their administration, either singly or combined, had entirely failed. There was considerable arteriosclerosis and some fibrous myocarditis. The urine was generally of a specific gravity of 1,011, occasionally a trace of albumin, and rarely a hyaline cast. Urea was usually about 0.70 to 0.80 percent, uric acid 0.02 to 0.025, the inorganic constituents diminished in about a daily output of 60 to 70 ounces. In this case chloral was absolutely contraindicated because of the debilitated condition of the patient and the danger of habit. With the exception of chloral and some of its close relatives, nearly every chemical hypnotic has been employed. The results have been those outlined in the discussion of individual drugs, as given above. The sulphons and ureas were efficient, but trional and veronal, in spite of all precautions, gave rise to hematoporphyrinuria. Somnos was a last resort, and the results are tabulated in the following chart.

As one studies this record, he cannot fail to be impressed by the certainty of action and the uniform time of sleep induction, the freedom

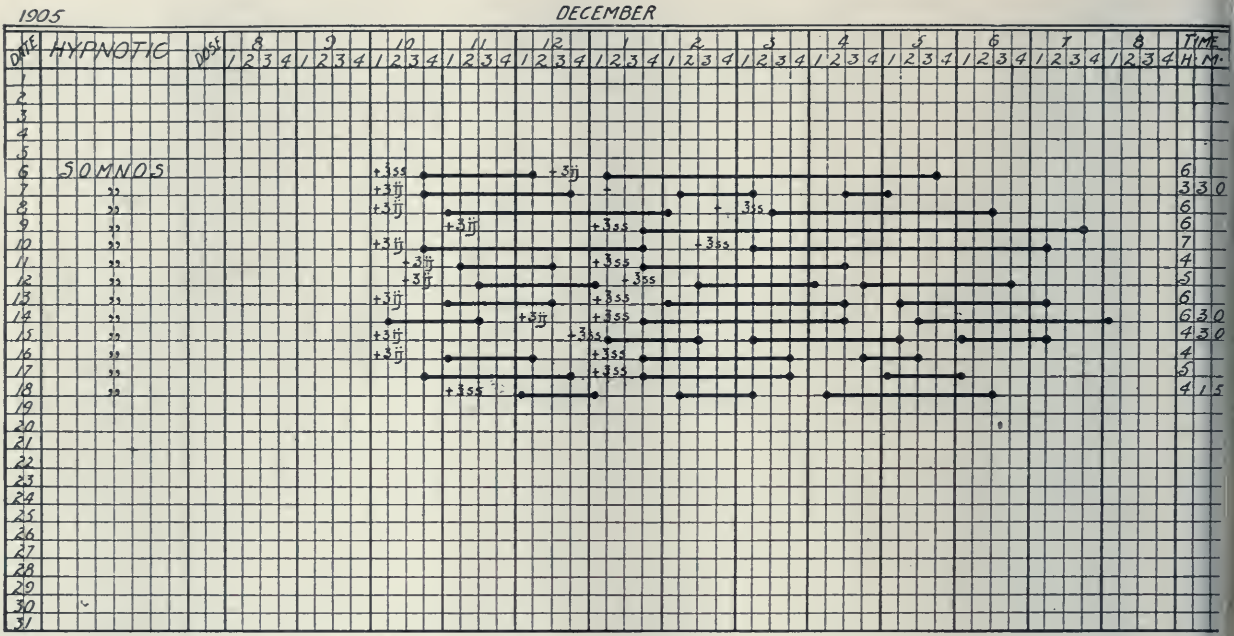


DATE	HYPNOTIC	DOSE	TIME H.	M.
1	SULFONAL, SOMNOS	20 GR	4	30
2	VERONAL, "	15 "	5	15
3	" "	15 "	5	30
4	" "	15 "	5	
5	SULFONAL "	20 "	5	30
6	" "	20 "	4	
7	" "	20 "	7	15
8	SOMNOS "	ʒvj	6	
9	"	ʒvj	6	15
10	"	ʒvj	6	30
11	"	ʒvj	6	15
12	"	ʒvj	7	15
13	"	ʒvj	6	45
14	"	ʒvj	5	
15	"	ʒvj	5	30
16	"	ʒvj	6	
17	"	ʒvj	6	
18	"	ʒvj	5	30
19	"	ʒvj	6	30
20	"	ʒvj	6	15
21	"	ʒvj	5	15
22	"	ʒvj	5	45
23	"	ʒvj	5	15
24	"	ʒvj	4	15
25	"	ʒvj	5	30
26	"	ʒvj	5	15
27	"	ʒvj	6	30
28	"	ʒvj	6	45
29	"	ʒvj	4	30
30	"	ʒvj	4	15
31	"	ʒvj	4	



DATE	HYPNOTIC	DOSE	TIME H.	M.
1	SOMNOS	ʒvj	4	30
2	"	ʒvj	5	
3	"	ʒvj	3	
4	"	ʒvj	4	
5	"	ʒvj	2	30
6	"	ʒvj	4	30
7	"	ʒvj	6	30
8	"	ʒi	4	15
9	"	ʒi	6	
10	"	ʒi	6	15
11	"	ʒi	5	15
12	"	ʒi	4	30
13	"	ʒi	6	
14	"	ʒi	4	30
15	"	ʒi	3	45
16	"	ʒiv	5	30
17	"	ʒiv	2	
18	"	ʒiv	6	
19	"	ʒiv	5	15
20	"	ʒiv	4	
21	"	ʒiv	4	45
+ 22	"	ʒiv	2	30

+ PATIENT WAS ATTACKED WITH PNEUMONIA, AND DISCONTINUED SOMNOS.



+ SOMNOS RECOMMENCED. NOTES TAKEN BY TRAINED NURSE.

from unpleasant after-effects, and the respectable total of hours of sleep. The quantity is of rather less importance than its quality, but here both are usually satisfactory; the former is doubtless recorded as below the actual amount obtained. The sleep approximates the normal repose, and resembles that of a carefully estimated dose of chloral, yet no increase of dosage has become necessary even after weeks of administration, nor are there to be found any evidence of impairment of any function or organ, except occasionally a slight impairment of digestion, nor is any craving established. Therapeutically, Somnos acts as chloral at its best; clinically, it is not chloral, for the results of the last week of administration do not differ either quantitatively or qualitatively from those of the first. On clinical results alone, this remedy is far removed from chloral; on therapeutic results, we may say that untoward phenomena are absent. These facts point to a product which is not chloral, and in this opinion the report of Sadtler, based on careful research, not only involving analytical, but physical chemistry as well, is absolutely in harmony.

Physiological Action of Trichlorethidene Propenyl Ether (Somnos).[1]

BY

COLIN C. STEWART, Ph. D.
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The physiological action of injections of the Somnos brand of Trichlorethidene Propenyl was tested with relation to heart, circulation and respiration in a lengthy series of experiments on dogs, rabbits and cats. In every case the preparatory work of introducing canulas, and the like, was done under light ether anesthesia, the ether being omitted as absolutely unnecessary after the first few injections of the Elixir Trichlorethidene Propenyl Ether (Somnos).

The blood-pressure was observed by connecting one carotid artery, by means of a flexible tube, with a mercury manometer provided with a float. Graphic records were obtained by recording the movements of the float on smoked paper carried by a long-roll kymograph.

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[1] From experiments done in part in the Laboratory of Physiology in the University of Pennsylvania; in part in the Laboratory of Physiology of Dartmouth Medical School.

The immediate effect upon dogs of the intravenous injection of 10 cc. to 12 cc. of the elixir (Somnos) is no greater than the effect of injecting the same amount of normal solution in the same way. This is shown in Tracing 1 of the accompanying figures, where, in a dog weighing 8.100 kilos, 12 cc. of Somnos were injected into the right crural vein. This is a dosage of 1.48 cc. per kilo of body-weight; and, since the dose prescribed by the manufacturers is 16 cc. for an adult of approximately 70 kilos in weight, or 0.23 cc. per kilo, the injection is more than six times that prescribed.

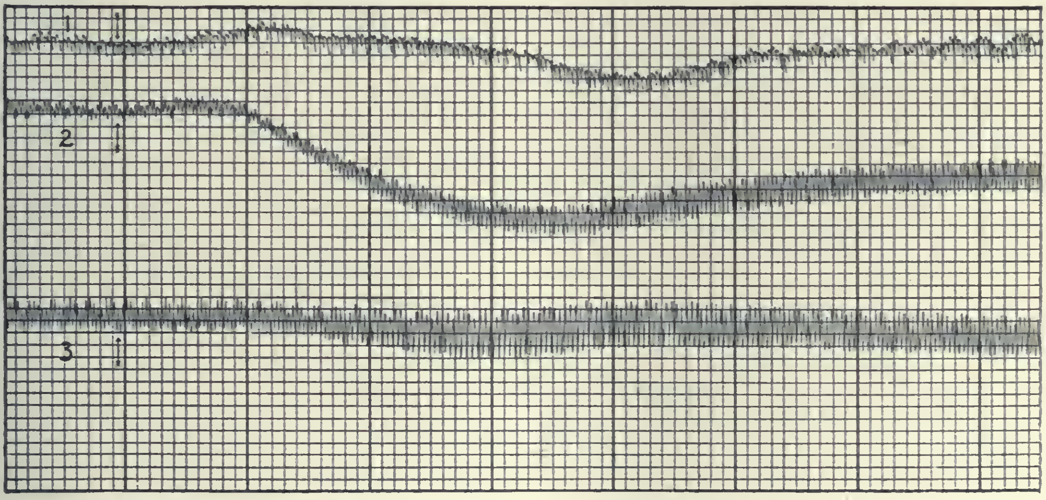

FIGURE 1.—Tracing 1 shows the effect of the first injection of 12 cc. Somnos in a dog; Tracing 2, of the third such injection; Tracing 3, of the seventh. Blood-pressure is measured from the base line. Five-sevenths original size.

As the tracing shows, there is very slight fall in blood-pressure, followed by a return to the normal almost immediately. This result showed no variation in the whole series of experiments.

It is only when this dose is repeated after a short interval that blood-pressure shows a slight permanent fall, accompanied by a slowing of the rate of respiration, which, however, remains perfectly regular. But with dogs even total doses corresponding to 20 times that prescribed show no greater fall in blood-pressure, and no greater decrease in the rate of heart beat and of respiration than those which are described as characteristic of normal sleep.[1]

If, now, the process is continued still further the effects become progressively greater. Each dose of 12 cc. is followed by a transitory fall in blood-pressure, from which the recovery is rapid but not quite complete. Each injection leaves the pressure a little lower, the heart rate a little slower, and the respiratory interval a little greater, until finally death follows, usually by failure of respiration, without struggle and without body movement of any kind.

Tracing 2 of Figure 1 shows the level of the blood-pressure after the second, and the effect of the third such injection. Tracing 3 of the same figure shows the result following the seventh. The fourth injection, making a total of 36 cc., corresponds to 19 times the prescribed dose; the seventh injection, a total of 84 cc., corresponds to 45 times the normal dosage.

In many instances in dogs it has been found impossible, within the limits of human endurance, to produce death in the manner described. Thus in one case 114 cc. of the elixir (Somnos) were injected intravenously, and 30 cc. administered by the stomach, in the course of three and three-quarter hours without fatal result. Disregarding the 30 cc. administered by the mouth, the remaining 114 cc. for the animal in question represented a dose of 11.75 cc. per kilo, or 51 times the prescribed dose of 0.23 cc. per kilo.

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[1] See American Textbook of Physiology, Vol. I, pp. 121 and 425. Also Schäfers' Physiology, Vol. II, pp. 80 and 101.

In two other dogs (II and III) the lethal doses were 68 cc. and 108 cc. respectively, corresponding to 33 and 57 times the prescribed dose of 0.23 cc. per kilo of body-weight.

A further series of experiments was then carried out to determine the lethal dose for cats, where the method of procedure was to test the effect of a single large injection. For this purpose it was necessary to obtain from the manufacturers a more concentrated form of the drug, to avoid disturbances which might arise from a comparatively sudden increase in the volume of the circulating blood. This concentrated preparation was obtained of a strength 20 times as great as that which is supplied to the profession.

Ten cats were used, each placed under light ether anesthesia for the exposure of a vein (crural or external jugular), and a varying quantity administered in one dose from a graduated syringe. Where slight dilution was necessary to insure accuracy in measuring, normal saline solution (0.9 percent) was used.

The following table shows the results, and with these, those referred to earlier:

It is thus seen that while the lethal dose varies considerably it is nevertheless enormous as compared with the amount ordinarily administered. The lowest lethal dose for dogs, 33 times the 0.23 cc. per kilo, would represent for a 70 kilo man 16.5 ounces of the elixir (Somnos). For cats the smallest quantity which produced death was 21 times the prescribed amount, representing, again, for a 70 kilo man, 10.5 ounces of the drug as it is supplied to the profession. In this case (No. VI of the table) there was a possibility that sodium carbonate solution was aspirated into the circulation by the relatively large fall in blood-pressure, for the carotid was connected by means of a tube filled with this solution, with the mercury manometer for graphic records. However, in Cat V, 26 times the normal dosage was fatal, while in Cat IX 30 times was fatal, so that it might readily be assumed that the result in Experiment VI was an individual variation in susceptibility.

The cause of death is found in failure of both respiration and heart. In Experiments VII and X the vagi were cut, and though in VIII the heart continued to beat for a little time after the cessation of respiration the beats were slow and feeble and were not maintained under artificial respiration for more than a few minutes. In Experiment X the heart ceased to beat at the same time that respiration failed. The effect produced upon the heart is therefore peripheral, and not secondary to cessation of respiration.

Animal	Method	Seat of Injection	Comparison with Normal Dose	Results
Dog I	Repeated injections	Crural vein	51 times.	Not fatal.
Dog II	" "	" "	33 "	Death by failure of respiration.
Dog III	" "	" "	57 "	Death by failure of respiration.
Dog IV	" "	" "	14 "	No great effect.
Cat I	One injection	" "	71 "	Death, respiration and heart failing together.
Cat II	One dose	By mouth	83 "	Death in three minutes.
Cat III	One injection	Crural vein	64 "	Death, respiration and heart failing together.
Cat IV	" "	" "	17.5 "	Not fatal, recovered in 10 hours, though still weak after 18 hours.
Cat V	" "	Jugular vein	26 "	Death, respiration and heart failing together.
Cat VI	" "	" "	21 "	Death, respiration and heart failing together.
Cat VII*	" "	Crural vein	20 "	Death, respiration and heart failing together.
Cat VIII	" "	" "	22 "	Not fatal.
	Second injection	" "	17 "	Death by respiratory and cardiac failure.
Cat IX	One injection	" "	20 "	Not fatal.
	Second "	" "	10 "	Death by respiratory and cardiac failure.
Cat X	One injection	" "	17 "	Not fatal.
	Second "	" "	17 "	Death by respiratory and cardiac failure.

* This was Cat IV of the previous day.

It must be borne in mind that the elixir (Somnos) is administered by the mouth while the tests were made by intravenous injection, but in certain conditions of the digestive tract absorption might be as rapid as an extremely slow injection lasting for several minutes. As nearly, therefore, as can be determined by experiments upon the lower animals, 20 times the normal dose (that is, 10 ounces of the elixir, Somnos, for a 70 kilo man) must be considered as an extremely dangerous quantity, while 30 times the prescribed dose (that is, 15 ounces for a 70 kilo man) may be considered as lethal.

The Physiological Action of Trichlorethidene Propenyl Ether on the Blood.

A report of tests made at the Laboratories of the University of Pennsylvania.

BY

WILLIAM H. LIPPERT, A. M., M. D.

Normal blood and its chemical composition are perhaps more susceptible to physiological changes than almost any other part of the human economy. A study of the general chemistry of the blood shows, according to C. Schmidt, that of 1,000 parts the corpuscles compose about 500 parts, and that of this proportion nearly one-third (14 percent, or 25 percent of the corpuscles) is hemoglobin. In the circulation this constituent of the blood is found chiefly in combination with oxygen as oxyhemoglobin which predominates in arterial blood. This is the important constituent of the normal blood, and the amount present is fairly constant, considerable variations being met only under certain pathological conditions.

Quincke has found that in chlorosis, leukemia, hepatic cirrhosis, nephritis, pyemia and typhoid fever, the percentage of hemoglobin is diminished to one-third of the normal. In an analysis of 63 cases of chlorosis at the Johns Hopkins Hospital, the average amount of hemoglobin was diminished to 59 percent.

The constituent parts of hemoglobin are certain albuminous globulins and hematin, an amorphous blackish-brown pigment which gives to the human blood-corpuscle its natural color. Microscopically normal human blood is found to contain erythrocytes or red blood cells, and leukocytes or white blood cells. The average number of the former is about 5,000,000 to the cubic millimeter, while of the latter there are usually between 5,000 and 7,000 to the cubic millimeter.

Clinicians have found that various pathological conditions will produce hematin, urorubrohematin, urofuscohematin, and hematoporphyrin in the urine, and in such conditions the effect of any therapeutic agent should be carefully considered before its administration in order that such an exhibition may not seriously complicate already existing conditions. Chloral, sulphonal or trichlorethidene propenyl ether may be indicated in the insomnia which so often occurs in pernicious anemia, chlorosis and typhoid fever. Clinical observation has revealed the fact that chloral crenates the erythrocytes and destroys the leukocytes when its use is prolonged. More recently sulphonal has been found to produce hematoporphyrinuria by reducing the hemoglobin of the erythrocytes and forming hematoporphyrin. Antifebrin, antipyrin, phenacetin and sulphonal, when given hypodermically or in sufficiently large doses internally dissolve the hemoglobin from the erythrocytes in the plasma of the blood, producing at first a very decided choluria and finally hemoglobinuria.

Such therapeutic agents are unsafe in anemic and chlorotic conditions; and in the diseases induced by the many disorders of the blood their use is contraindicated.

To further comprehend the action of such drugs upon the blood, a series of comparative animal experiments was undertaken and the results obtained show conclusively that many of the hypnotics are unsafe to exhibit in anemic conditions.

The tests made were:

First.—The enumeration of the corpuscles of the normal blood by the method of Thoma-Zeiss.

Second.—The enumeration of the corpuscles of the blood after the exhibition of trional, sulphonal, chloral, paraldehyd and trichlorethidene propenyl ether.

The instrument used was the hemocytometer of Thoma-Zeiss.

The diluent used was Tosson's fluid, as the leukocytes take the methyl violet stain more readily and are more easily distinguished from the erythrocytes.

The composition of the diluent is:

℞—Aquæ dest	160 parts
Glycerini	30 "
Sodii Sulphas	8 "
Sodii Chlorid	1 "
Methyl Violet	0.025 part
	199.025 parts

The degree of dilution used was 1 in 200.

In reading the blood counts made, and in calculating the number of erythrocytes contained in one cubic millimeter, the following method was employed:

The Thoma-Zeiss cell or receptacle containing the drop of diluted blood is a chamber of 1-10 of a millimeter in depth, whose floor is ruled in small squares, each 1-20 of a millimeter in diameter. Each small square, therefore, underlies a space 1-4000 of a cubic millimeter. The average number of erythrocytes contained in one of these small squares multiplied by 4,000 and this product in turn multiplied by the degree of dilution, 200, determined the number of erythrocytes to the cubic millimeter. The same process was employed before and after each injection.

The results of these tests, and the blood changes found in each experiment, follow:

SOMNOS brand of the Elixir, each 100 cc. of which contains 5.4 gm. of Trichlorethidene Propenyl Ether. Dog, 2 kilos.

No. of counts.	Erythrocytes before injection.	Erythrocytes after injection.	Percent reduction in erythrocytes.	REMARKS.
A	6,570,000	6,560,000	.001	Injection 2 drams of the elixir=7 oz. in 150 lb. man.
B	6,750,000	6,690,000	.008	Injection same as A.
C	6,570,000	6,570,000	.000	Injection same as A.
D	6,680,000	6,660,000	.002	Injection same as A.
			$\frac{3}{1000}\%$	

Trichlorethidene Propenyl Ether shows reduction of Erythrocytes of but 3-1000 percent.

TRIONAL. Dog, 2 kilos.

No. of counts.	Erythrocytes before injection.	Erythrocytes after injection.	Percent decrease in erythrocytes.	REMARKS.
A	6,396,000	4,860,000	24	Injection 1 1-2 gr.=56 gr. in 150 lb. man.
B	6,750,000	5,130,000	24	Injection 1 gr.=37 1-2 gr. in 150 lb. man.
C	6,480,000	4,970,000	23 3-10	Injection same as A.
D	6,570,000	5,080,000	22 6-10	Injection same as B.
			$23\frac{4}{100}\%$	

Trional shows reduction of Erythrocytes of 23 4-100 percent.

PARALDEHYD. Dog, 3.5 kilos.

No. of counts.	Erythrocytes before injection.	Erythrocytes after injection.	Percent decrease in erythrocytes.	REMARKS.
A	6,970,000	5,020,000	27 9-10	Injection 4 1-2 m.=90 m. in 150 lb. man.
B	7,180,000	5,090,000	29 1-10	Injection 3 m.=60 m. in 150 lb. man.
C	7,080,000	5,110,000	27 8-10	Injection same as B.
D	6,990,000	5,010,000	28 1-10	Injection same as B.
			$28\frac{2}{100}\%$	

Paraldehyd shows reduction of Erythrocytes of 28 2-100 percent.

SULPHONAL. Dog, 3.5 kilos.

No. of counts.	Erythrocytes before injection.	Erythrocytes after injection.	Percent decrease in erythrocytes.	REMARKS.
A	7,550,000	5,120,000	32 1-10	Injection 2 1-4 gr.=45 gr. in 150 lb. man.
B	7,690,000	5,230,000	31 9-10	Injection same as A.
C	9,080,000	4,690,000	33 7-10	Injection 2 1-2 gr.=50 gr. in 150 lb. man.
D	7,320,000	4,910,000	32 9-10	Injection same as C.
			$32\frac{6}{100}\%$	

Sulphonal shows reduction of Erythrocytes of 32 6-100 percent.

CHLORAL. Dog, 3 kilos.

No. of counts.	Erythrocytes before injection.	Erythrocytes after injection.	Percent reduction in erythrocytes.	REMARKS.
A	6,830,000	5,800,000	15	Injection 2 gr.=50 gr. in 150 lb. man.
B	6,880,000	5,870,000	14 6-10	Injection 1 1-2 gr.=38 gr. in 150 lb. man.
C	6,750,000	6,600,000	16 4-10	Injection 1 3-4 gr.=43 gr. in 150 lb. man.
D	6,790,000	5,500,000	18 9-10	Injection same as C.
			$16\frac{2}{100}\%$	

Chloral shows reduction of Erythrocytes of 16 2-100 percent.

These comparative experiments showed that sulphonal diminished the number of the red blood cells on an average of 32 percent; paraldehyd. 28 percent; trional, 23 percent, and chloral, 16 percent. In great contrast to these, trichlorethidene propenyl ether caused a decrease in number of but an average of 3-1000 percent, or had practically a negative action on the red blood cells. Trichlorethidene propenyl ether does not reduce hemoglobin, as it was impossible to find hematoporphyrinuria in a single case where this hypnotic was exhibited. This property at once entitles it to the distinction that it is in this respect a safe and reliable hypnotic and cerebral sedative when indicated in cases complicated by deficiency in the hemoglobin of the blood. Trichlorethidene propenyl ether is without effect upon the blood, its chemical composition or physiological properties.

Additional tests for the purpose of ascertaining the action of chloral, paraldehyd, trional, sulphonal, veronal, and trichlorethidene propenyl ether upon the hemoglobin and its reduction and elimination through the urine, are now being conducted, and their results will be published in a subsequent report.

Chemistry of Trichlorethidene Propenyl Ether.

BY

SAMUEL P. SADTLER, Ph.D., LL.D.

Professor of Chemistry in the Philadelphia College of Pharmacy; Author of "A Handbook of Chemical Experimentation," "A Handbook of Industrial Organic Chemistry," "A Textbook of Pharmaceutical and Medical Chemistry," and Chemical Editor of "The United States Dispensatory."

ABSTRACT.

At the request of Dr. F. E. Stewart, Secretary of the American Pharmacologic Society, a chemical study of Somnos was undertaken in December, 1905. Samples of the Somnos, together with portions of anhydrous trichloraldehyd and concentrated glycerin, were thereupon furnished by Mr. C. E. Vanderkleed, Research Chemist for the H. K. Mulford Company, together with the claims made for the product as set forth in this bulletin. Mr. Vanderkleed also stated that he believed the rational formula of the product to be $\left[CCl_3CH\begin{smallmatrix}OH\\O\end{smallmatrix}\right]_3C_3H_5$,—or $C_9H_{11}O_6Cl_9$. The analogy of this compound, from the chemical standpoint, with chloral alcoholate, the crystalline compound formed by the union of ethyl alcohol and chloral was also pointed out.

A careful study of the literature relating to analogous compounds was then made with the following results:

"We were fortunate in finding several very important references not only to the chemistry of chloral alcoholate, but perfectly clear indication that the reaction of glycerin on chloral had been studied, at least qualitatively, as early as 1874. Louis Henry, of Louvain, Belgium, in an article published in 'Berichte der deutschen chemischen Gesellschaft,' VII (1874), p. 762, states as follows with regard to chloral addition compounds: 'Chloral unites with energy with water and with alcohols to form compounds of the general types $CCl_3.CH\left\langle\begin{matrix}OX\\OH\end{matrix}\right.$, in which X is a positive radical derived from a monatomic or polyatomic alcohol or an alcohol acid.' Henry says, in addition: 'I have established this fact with a large number of alcohol compounds, which by their nature and function were very different, as for instance, with the polyatomic alcohols such as glycol, glycerin, the basic ethers such as ethylene chlorhydrin, glycerin dichlorhydrin, with acids possessing alcoholic function or with their esters, such as ethyl glycollate, ethyl lactate, and ethyl tartrate. I believe that chloral can be considered to be a kind of reagent for all bodies with alcoholic nature.'

"Henry states further: 'All of these addition compounds of chloral are formed with development of heat, which is stronger as the radical X is the more positive or is richer in hydrogen or poorer in carbon.'

"Henry states that 'none of these addition compounds is volatile without decomposition. On heating they are all decomposed or dissociate.' The chloral hydrate or chloral alcoholate, as is known, can be crystallized; the others form syrupy liquids with no tendency to crystallize as far as can be discovered, which makes their isolation a matter of the greatest difficulty when taken in connection with their instability on heating."

Dr. Sadtler, then states his preference for the chemical name "Trichlorethidene Propenyl Ether" for $\left\{CCl_3CH\left\langle\begin{matrix}OH\\O\end{matrix}\right.\right\}_3C_3H_5$, based on the nomenclature of Roscoe and Schorlemmer, Vol. III, Part II, page 78, advising the discarding of the name chloræthanal alcoholate previously used by the H. K. Mulford Company on the ground that the term "Chloræthanal" is now practically obsolete, and that the term "alcoholate" should not be applied to compounds of a polyatomic alcohol such as glycerin, but only to those of ethyl alcohol.

The report next states:

"That chemical compounds are, however, formed by the addition of anhydrous chloral and concentrated glycerin, is almost indisputable. The observations which it seems to us justify these conclusions are:

"1. The heat developed on admixture of the two substances.

"2. The physical properties of the resultant product.

"3. The physiological properties, differing quite notably from those of either chloral hydrate or glycerin taken singly.

"4. The analysis of such products as could be isolated and derivatives of the same."

The observations are taken up in detail.

I. Heat of Reaction.

Under this head it is shown that the heat produced when anhydrous chloral and concentrated glycerin are mixed in the proportion of 3 molecules to 1 is greater than that produced in any other proportion. However, when the proportion 2 to 1 was used the heat production was *almost* as great as with the 3 to 1 proportion. The existence, therefore, of the partially saturated propenyl ether $\left[CCl_3CH\left\langle\begin{matrix}OH\\O\end{matrix}\right.\right]_2C_3H_5)OH)$, as well as the fully saturated $\left[CCl_3CH\left\langle\begin{matrix}OH\\O\end{matrix}\right.\right]_3C_3H_5$, is probable.

The behavior of glycerin, with regard to the replacement of its hydroxyl hydrogen, in the formation of other compounds, also justifies the belief that some $\left\{CCl_3CH\left\langle\begin{matrix}OH\\O\end{matrix}\right.\right\}_2C_3H_5(HO)$ is formed, as well as $\left\{CCl_3CH\left\langle\begin{matrix}OH\\O\end{matrix}\right.\right\}_3C_3H_5$.

"In the formation of esters, as illustrated by the case of the natural fats, as well as the formation of inorganic esters like trinitrate, the triacid neutral esters seem to form more readily. On the other hand, when chlorin or bromin is introduced, as by the action of HCl or HBr, as also by the action of PCl_5 or PBr_5 upon glycerin, monochlorhydrin, $C_3H_5Cl(OH)_2$, dichlorhydrin. $C_3H_5Cl_2(OH)$, and epichlorhydrin, C_3H_5OCl tend to form, and it is only by prolonged action that trichlorhydrin or tribromhydrin are formed (Myer & Jacobson, Vol. 1, page 582). Similarly the metallic alcoholates of glycerin (or glycerates), such as form with lime, strontia, baryta, oxid of lead, as well as the alkaline glycerites, seem to be predominantly monoglycerites (Ibid., p. 582). The case of glycerophosphoric acid, $C_3H_5(OH)_2H_2PO_4$, is also one that may be recalled. When two stearic acid radicals replace the other two hydrozyl hydrogens of the glycerin we get a more stable molecule, which, with the base cholin, gives us lecithin (distearylglycerophosphate of cholin)."

II. PHYSICAL PROPERTIES.

The product of the reaction of 3 molecules of chloral to 1 of glycerin, when cooled to room temperature, consists of a viscid mass, or solidified jelly, which will not flow on inverting the container. It can be softened and made to liquefy by heating, or can be changed to a brittle solid on chilling by a freezing mixture. This mass is, of course, much more solid than either chloral or glycerin taken at the same temperature, and thus indicates the formation of a chemical compound as distinguished from mere solution, which would have tended to lower the freezing-point instead of raising it as here effected.

The proportion of 3 molecules of chloral to 1 of glycerin gave the firmest jelly, although in the case of the 2 to 1 proportion, the difference was not great. Further increase in either direction produced a more liquid product.

The solidified product no longer possesses the odor of chloral.

Anhydrous chloral is soluble in water and alcohol, forming addition compounds in each case, which are then soluble in excess of water and alcohol respectively. It is also soluble in ether, chloroform, benzene, petroleum benzine, carbon disulphid and carbon tetrachlorid. Glycerin is soluble in water and alcohol but not in pure ether free from alcohol, nor in chloroform, carbon disulphid, carbon tetrachlorid, benzene or petroleum benzine. The newly formed compound is slowly soluble in water, more readily in alcohol, but with the possibility of some decomposition taking place in both cases because of secondary reactions resulting in chloral hydrate and chloral alcoholate formation; readily soluble in ether, glycerin, chloroform and carbon tetrachlorid; nearly insoluble in carbon disulfid, benzene and petroleum benzine.

The mixture made in the proportion of 1 to 1 was not completely soluble in such solutions as chloroform and carbon tetrachlorid, indicating uncombined glycerin.

Next, in order to fix definitely the proportions in which the two substances combine, definite proportions were obtained for analysis, from mixtures in various proportions, by the three following methods:

(*a*) By dissolving in ethereal solvents, washing out excess of uncombined chloral with water, and analyzing the residue.

(*b*) By dissolving in ethereal solvents repeatedly, evaporating off the solvent at a low temperature (which carries with it excess of uncombined chloral), and analyzing the residue.

(*c*) By dissolving a mixture, containing an excess of chloral (4 to 1 mixture), in carbon tetrachlorid, and allowing the solvent to evaporate off at a gentle heat so as to have it carry off uncombined chloral, and analyzing the residue.

Cl figure required for $\left[CCl_3CH\Big\langle{OH \atop O}\right]_3C_3H_5$ 59.7 percent.

Cl figure required for $\left[CCl_3CH\Big\langle{OH \atop O}\right]_2.C_3H_5(OH)$ 54.9 percent.

The results all came between the two figures, indicating either that some $\left[CCl_3CH\Big\langle{OH \atop O}\right]_2.C_3H_5(OH)$ formed from the start, or that the $\left[CCl_3CH\Big\langle{OH \atop O}\right]_3C_3H_5$ yields the other compound as a secondary product in the processes of isolation and purification. The fact should be considered, however, that inasmuch as only low temperatures could be employed in removing ethereal solvents, any traces of retained ether or water would slightly lower—and not raise—the chlorin content.

In the case where carbon tetrachlorid was used, the residual compound had no odor of chloral but a trace of the odor of the solvent.

The chlorin percentage was 59.7 which was perhaps a trifle high from the traces of carbon tetrachlorid remaining.

III. The Physiological Properties.

No attempt was made by Dr. Sadtler to do anything in this field.

IV. Examination of Derivatives Obtained From the New Compounds.

Acetyl and chlorin derivatives of Somnos were attempted, but it was not possible to isolate them for analysis on account of the instability of Trichlorethidene Propenyl Ether on heating, secondary reactions attended by the formation of acetyl and chlorin compounds of glycerin and chloral taking place.

In the opinion of Dr. Sadtler, the test for absence of hydrated chloral, as given in this bulletin, is subject to the criticism that it is not sufficiently delicate to detect traces of chloral or hydrated chloral on account of the great solubility of hydrated chloral in water, and its slighter solubility in carbon disulphid. Dr. Sadtler proposes another test, which is inserted in this bulletin, together with a test for the absence of chloral alcoholate, and a method for the quantitative determination of Trichlorethidene Propenyl Ether.

Dr. Sadtler's report concludes as follows:

"While we regret that the isolation of a definite compound resulting from the reaction of chloral on glycerin seems to be almost impracticable owing to its instability, we feel satisfied we have shown that such a compound or compounds, with properties distinct from chloral or hydrate, form.

"In the preparation of Somnos as put out by you, the compound as formed is protected from decomposition, * * * * as is shown by the fact that the alcohol afterwards added causes no formation of chloral alcoholate, and for the same reason no chloral hydrate is produced by its dilution with water."

[Copies of the original report in full may be obtained by addressing the Secretary of The American Pharmacologic Society.]

The Somnos Brand of Trichlorethidene Propenyl Ether.

BY

CHAS. E. VANDERKLEED, Ph.C., B.S., A.C.
Chief Chemist for the H. K. Mulford Company.

Somnos is the word-mark, or trade-name, used by the H. K. Mulford Company to distinguish their brand of Trichlorethidene Propenyl Ether and preparations of the same.

A request has been made by the H. K. Mulford Company for the privilege of marketing their brand of Trichlorethidene Propenyl Ether (Somnos) under the auspices of the Society. Accordingly, and in compliance with its rules and regulations, the information contained in the following paragraphs was furnished the Society. Somnos is, at the present time, marketed only in the form of an elixir. Ordinarily, therefore, the rules of the Society would call only for a description of this elixir. Since, however, the active ingredient (Trichlorethidene Propenyl Ether) of this elixir has not yet been adequately described in scientific literature, complete information concerning this compound has also been appended. This information serves to make clear that Trichlorethidene Propenyl Ether is a hypnotic belonging to the methane group—that its empirical formula is $C_9H_{11}O_6Cl_9$—and that it is formed by the action of trichloraldehyd or chloral (CCl_3COH) on the polyatomic alcohol glycerin $C_3H_5(OH)_3$. The chapter preceding (p 431), consisting of an abstract of the results of a chemical investigation of Trichlorethidene Propenyl Ether by Dr. S. P. Sadtler and son, verifies the statement above made.]

This compound was first manufactured in the laboratories of the H. K. Mulford Company and introduced to commerce with the claim to possess the hypnotic qualities of chloral, without its untoward effects. This claim, judging from the evidence presented in the chapters by Dr. Colin C. Stewart (p. 426) and Dr. Reynold Webb Wilcox (p. 421) appears to be well founded.

The word Somnos, used to designate the Mulford brand of Trichlorethidene Propenyl Ether and its preparations, is a trade-mark.

The only preparation of the product offered by the H. K. Mulford Company is the elixir, containing in each 16 cc. (4 fluidrams, or one tablespoonful)—1.2 gm. (18½ grains) of a concentrated (73 percent) Trichlorethidene Propenyl Ether Solution in glycerin (equivalent to 0.876 gm. of pure Trichlorethidene Propenyl Ether), about 0.64 cc. (10 minims) of U. S. P. alcohol,* and sufficient saccharin and aromatics to make the preparation palatable. This claim may readily be verified by the following processes, which depend upon showing, first that the preparation contains no free (uncombined) chloral or hydrated chloral, after which chlorin determinations may be calculated into percentage of Trichlorethidene Propenyl Ether. The possible interference of chlorin in form of chlorids is also provided for.

Methods of Samuel P. Sadtler, Ph. D., LL. D. and S. S. Sadtler, S. B.

"A. Test for Chloral or Chloral Hydrate.—The presence of both chloral or the hydrate and alcoholate would not be looked for at the same time, for the reason that if the preparation were made alcoholic the alcoholate would be formed from any free chloral, so that in applying the test for chloral we would assume that alcohol had not been added to it. To show the presence of chloral, therefore, alcohol could be added, and after evaporating off at low heat, say 50° C., until all alcohol was removed. and putting it in a distilling bulb and further testing for the removal of alcohol by catching the first portions of the distillate and testing with iodin and sodium hydrate, the test for combined alcohol would then be made by adding alkali to the liquid in the distilling bulb, and distilling again, and testing the distillate with iodin and sodium hydrate for the presence of iodoform, which would be noticed by its odor after sealing the receiver for a short time.

"B. Test for Alcoholate.—This is made the same as the test for alcoholate in 'A' only no alcohol is added to the preparation.

"C. Determination of the Amount of Condensed Product.—Concentrate the preparation by slow evaporation at 50° C., dissolving the residue in three successive portions of ether, each amounting to about ten times its volume, and allow the ether to evaporate off at room temperature or very moderate heat, such as 30° or 35° C.; weigh this residue and take definite amount of this and determine the chlorin by Carius method, or other absolutely reliable method. We would refer to the crucible method described by one of us in the *Journal of the American Chemical Society*, September, 1905."

Methods of C. E. Vanderkleed, Ph. C., B. S., A. C.

A. Test for Absence of Chloral or Hydrated Chloral.—Evaporate one fluidounce of Somnos at low temperature, on water bath, until free from alcohol (Somnos contains about 4 percent). Dilute to original volume with water, and shake well with an equal volume of carbon disulphid. Let stand over night for the complete separation of the layers. Remove the carbon disulphid layer, filter it and evaporate carefully to dryness, in a warm place. Dissolve any residue in water, and warm with sodium hydroxid T. S. No odor of chloroform should be obtained (absence of chloral or hydrated chloral).

B. Determination of Amount of Trichlorethidene Propenyl Ether.—By means of a pipet or buret, run .5 cc. of Somnos into a test-tube, and add 2.5 cc. of glacial acetic acid, C. P., and 2.5 cc. of distilled water. Then drop in .5 gm. of pure granulated zinc, cover mouth of test-tube with filter paper and set the tube aside for 24 hours, agitating it occasionally. Pour the solution into an evaporating-dish and rinse the tube and undissolved zinc with several portions of distilled water, using about 50 cc. in all. Add potassium chromate indicator, and titrate against decinormal silver nitrate V. S.

Not less than 4.7 cc. nor more than 5 cc. should be required (after subtracting the number of cubic centimeters used in the check titration in the following paragraph), each cubic centimeter of decinormal silver nitrate equaling 0.00589 gm. of Trichlorethidene Propenyl Ether ($C_9H_{11}O_6Cl_9$), or indicating 1.6 gm. concentrated Trichlorethidene Propenyl Ether Solution (73 percent) per 100 cc.

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*Originally the amount of alcohol present in the elixir was 13 percent. making each 16 cc. to contain 2.08 cc. (34 minims) of U. S. P. alcohol; and some of the older lots of elixir still on the market may contain the higher amount. Careful experiments and observations covering many months, however, having demonstrated that the percentage of alcohol, which in certain cases might be objected to, could be materially lowered without deranging the physiological effect, the pharmaceutical elegance, or the keeping qualities of the preparation, the amount of alcohol has been cut down to a minimum, and all lots bearing the number 52,232 or a larger (later) one, contain only about 4 percent of U. S P. alcohol.

To guard against interference by possible chlorids, add .5 cc. Somnos to 50 cc. distilled water and titrate against decinormal silver nitrate V.S. using potassium chromate as indicator. Subtract the number of cubic centimeters required from the amount required in the titration in the preceding paragraph.

Reference in the foregoing paragraphs to a concentrated (73 percent) solution of Trichlorethidene Propenyl Ether in glycerin makes it essential at this point to describe this product in detail. As produced in the laboratory of the H. K. Mulford Company, this concentrated Trichlorethidene Propenyl Ether (Somnos) Solution occurs as a clear, pale-yellowish, viscid liquid, oily to the touch, having a penetrating, aromatic and acrid odor, and a bitter nauseating taste. It contains 73 percent by weight of Trichlorethidene Propenyl Ether.

This solution has a specific gravity of 1.550 to 1.580 at 25° C. (77° F.). It is freely miscible with water in all proportions, also with alcohol, ether and glycerin. It is very slightly soluble in petroleum benzine and carbon disulphid, and partly soluble in chloroform and benzol.

When heated considerably above 38° C. (100° F.) this solution of Trichlorethidene Propenyl Ether is decomposed. Under continued heat this solution is finally entirely decomposed and dissipated.

When cooled to −10° C. (14° F.) this solution becomes very viscid, but does not crystallize.

An aqueous solution of this product is slightly acid to litmus paper.

Trichlorethidene Propenyl Ether Solution is decomposed by heating with caustic alkaline earths and ammonia, chloral being first formed, which in turn is decomposed, chloroform and a formate of the base resulting. When warmed with a few drops of aniline and sodium hydroxid T.S. the odor of phenyl isocyanid (isonitrile) becomes apparent.

If 10 cc. of this Trichlorethidene Propenyl Ether Solution be mixed with an equal volume of water, and then be shaken in a separatory funnel with 20 cc. pure carbon disulphid, and if the latter, after separating in a clear layer, be allowed to evaporate in a moderately warm place, the residue, if there be any, on being dissolved in water and warmed with sodium hydroxid T. S., should not give any odor of chloroform (absence of hydrated chloral).

Trichlorethidene Propenyl Ether Solution on ignition in a crucible should, after continued heating, be entirely consumed, leaving no residue (absence of mineral impurities).

If 5 cc. of Trichlorethidene Propenyl Ether Solution be mixed with an equal volume of concentrated sulphuric acid in a test-tube, the liquid should acquire, on standing for one hour, a color not darker than yellow (absence of readily carbonizable impurities).

An aqueous solution of this Trichlorethidene Propenyl Ether product (1 in 20) acidulated with nitric acid, should remain unaffected by silver nitrate T. S. (absence of hydrochloric acid and chlorids).

The aqueous solution (1 in 20), when acidified with hydrochloric acid, should not respond to the Time-Limit Test for heavy metals. (See U. S. Pharmacopeia, 8th Revision, under Appendix, Test No. 121.)

Five cubic centimeters of the aqueous solution (1 in 10) should not respond to the Modified Gutzeit's Test for arsenic. (See U. S. Pharmacopeia, 8th Revision, under Appendix, Test No. 17.)

In applying the foregoing tests for identity and purity to the marketed Somnos Elixir, it would be necessary, of course, to first remove the aromatics by shaking out with carbon disulphid, and, finally, to extract some of the Trichlorethidene Propenyl Ether by means of ether. If the test for purity, as for instance, with concentrated sulphuric acid, were applied directly to the elixir, the aromatics present would interfere.

EXPERIMENTS WITH ANHYDROUS TRICHLORETHIDENE PROPENYL ETHER.

A quantity of Trichlorethidene Propenyl Ether, prepared from anhydrous materials, had the following characteristics:

A clear, colorless, glassy, viscid mass, so hard that it cannot be poured from beaker at ordinary room temperature, having a bitter, astringent taste, a numbing effect on the tongue, and a faint peculiar aromatic odor.

Slowly soluble in water, alcohol, ether and glycerin, more readily soluble in alcohol and ether than in water and glycerin; slowly but completely soluble in chloroform; slightly soluble in carbon disulphid.

On cooling to –10° or –12° C., it freezes to a brittle, glassy mass, which, on warming to 12° or 14° C. resumes its normal condition, but it does not crystallize in definite form on freezing. Like the 73 percent solution, it is decomposed by heat.

The fact that Trichlorethidene Propenyl Ether decomposes on application of heat, thereby preventing the determination of a true boiling-point (except perhaps under a very high vacuum), makes it necessary to adduce other evidence of its true synthetic nature. The following observations and experiments all prove that Somnos is a true synthetic, and not a mere mixture of solution.

1. The heat produced by the reaction of molecular proportions of the reacting ingredients is very marked. When the proper molecular proportions are used (3 of the chloral to 1 of the glycerin), an increase of 75° C. has been observed. When, however, these proportions are varied in any way, the rise in temperature is less marked.

2. The most nearly solid product is obtained by the reaction of the proper molecular proportions of the reacting ingredients. In any other proportions, the product is softer. At –10° to –12° C. the anhydrous product freezes to a brittle solid. The anhydrous reacting ingredients, separately cooled to –17° C., do not freeze. The freezing-point is therefore *raised* by their combination, which fact indicates chemical union, and not mere solution, which causes a lowering of freezing-points.

3. The anhydrous product no longer possesses the odor of the reacting substances. The water solution of anhydrous Somnos has a peculiar aromatic odor, entirely different from the odor of hydrated chloral.

4. In making the carbon disulphid extraction according to directions given above, and making the chloroform reaction, no odor of chloroform is produced. But if a sample, made with an excess of chloral, or to which some chloral has been added, be subjected to the extraction and subsequent test under the same conditions, a noticeable amount of chloroform is produced.

5. Anhydrous Somnos is completely soluble in chloroform. Somnos, with excess of chloral, is completely soluble in chloroform.

Somnos, with excess of glycerol, is *partly* soluble in chloroform, the excess of glycerol remaining undissolved.

Chloral is completely soluble in chloroform.

Glycerol is insoluble in chloroform.

Now, the complete solubility of Somnos in chloroform can be caused in two ways. Either Somnos is a definite compound which is soluble in chloroform, or Somnos is a mixture which dissolves to a clear solution in chloroform, because glycerol is soluble in a chloroform solution of chloral.

The following experiment was made: A definite amount of chloral was dissolved in ten times its weight of chloroform. Glycerol, in proper molecular proportion to produce, with the chloral, Somnos, was then added and the mixture vigorously shaken. *The glycerol remained undissolved.* Therefore, glycerol is *not* soluble in a chloroform solution of chloral, and the solubility of Somnos in chloroform must be a property of the compound, Somnos, and not a property of the reacting substances from which Somnos is formed.

6. Physiological properties of the reacting ingredients are changed by their combination. (See report on physiological action, pp. 431 and 439.)

Statement by the H. K. Mulford Co.

Dosage.

Trichlorethidene Propenyl Ether is marketed in the form of an elixir (Somnos), each 100 cc. of which contains 5.4 gm. of Trichlorethidene Propenyl Ether, with an excess of glycerin added.

The average dose of Somnos (Elixir Trichlorethidene Propenyl Ether,[1] Mulford's) is 16 cc. to 32 cc. (1 to 2 tablespoonfuls).

As a sedative, and antispasmodic children, 15 minims to 1 teaspoonful, repeated every two or three hours, or oftener if necessary, in water or milk; adults, 1 teaspoonful to 1 tablespoonful every one or two hours, or oftener, in water or milk.

In many institutions and sanatoriums, Somnos is used in teaspoonful doses, repeated every one-half to one hour until patient is quieted or relieved, and then less frequently.

As a hypnotic in acute mania, alcoholic mania, chronic insomnia, etc., children, 30 minims to 2 teaspoonfuls in water or milk, repeated if necessary; adults, 1 to 2 tablespoonfuls in one-half glass of water or milk. Many physicians prefer to administer the first dose one hour before usual bedtime, and repeat on retiring or within an hour.

As a hypnotic, or for hysteria, the initial dose should be large. For further information on dosage, see reports by Reynold Webb Wilcox, p. 424, and Colin C. Stewart, pp. 427-8-9.

As pointed out by Professor Sadtler, the excess of glycerin is added to the elixir to protect it from decomposition, which is proven by the fact that when alcohol is added to the elixir (Somnos), no formation of chloral alcoholate occurs, neither is any hydrated chloral produced by its dilution with water.

Although the amount of chemically combined chloral in Elixir Trichlorethidene Propenyl Ether amounts to 82.76 percent, the dosage of Trichlorethidene Propenyl Ether is not founded upon the amount of chloral in the molecule of this substance. The same principle applies to the other hypnotics of the methane group and to other chemical compounds, such as codeine, for example, which is derived from morphin. While the codeine molecule contains 95.5 percent of morphin, it requires at least three or four times as much of the former to produce the same physiological effects.

Trichlorethidene Propenyl Ether is not chloral. The essential principle underlying all chemical union is that the elements and groups making up the compound are changed in their physical, chemical, physiological and therapeutic properties by the combination.

As nearly as can be determined by experiments upon animals, it requires 15 fluidounces of the elixir (Somnos) to constitute a lethal dose for a 150 pound man (see Colin C. Stewart's report, p. 429) which in molecular equivalent would represent about 350 grains of hydrated chloral. This dose of 15 fluid-ounces is 30 times the prescribed dose of one tablespoonful. Dr. Stewart further states (p. 427) that when injected in dogs, total doses of the elixir (Somnos) corresponding to 20 times that prescribed shows no greater fall of blood-pressure, and no greater decrease in the rate of heart beat and of respiration than those which are described as characteristic of normal sleep. Dr. Lippert's report (p. 429) shows that the drug does not produce the deleterious effects upon the blood which characterize chloral, trional, paraldehyd and sulphonal. These facts seem to indicate that we have in Trichlorethidene Propenyl Ether the long-desired hypnotic possessing the therapeutic virtues of chloral without its untoward effects.

Experience and caution are required in the preparation of the Elixir Trichlorethidene Propenyl Ether. Before it is allowed to be used, each lot is tested for, and proved to be free from, uncombined chloral. (See tests by Sadtler and Vanderkleed, p. 435.

All of our literature relating to "Somnos" will be dated to correspond with the bulletins of the American Pharmacologic Society, that the profession will be advised by further collective investigations. As the Society will publish its findings, whether favorable or otherwise, each edition of the bulletin will contain additional information.

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[1] Formerly known as Chloræthanal Alcoholate, a name which has been dropped because, as pointed out by Dr. S. P. Sadtler in his report on the chemistry of this product, the term "chloræthanal" is no longer in common use, and the term "alcoholate" should properly be applied only to derivatives of the monatomic ethyl alcohol, and not to polyatomic alcohols.

The reasons why we adopted "Trichlorethidene Propenyl Ether" suggested by Professor Sadtler as a proper descriptive name for the product are: (1) The name is in harmony with Henry's classification of the compounds to which it belongs; (2) it is also in harmony with the nomenclature of Roscoe and Schorlemmer; (3) the name, "Chloral Glycerate" is objectionable from a chemical standpoint, as the terms "glycerate" and "glycerite" presuppose the existence of nonexisting glyceric and glycerous acids; also the term "glycerite" is used to describe a class of pharmacopeial preparations, as glycerite of tannic and carbolic acids, hydrastin, etc. The use of "glycerate" to describe a definite chemical compound of chloral and glycerin would undoubtedly lead to confusion, and give the impression that trichlorethidene propenyl ether is merely a solution of chloral in glycerin.

H. K. Mulford Company.

Bibliographic and Chronologic Statement.

BY
F. E. STEWART, M. D., Ph. G.
of East Orange, N. J.

Author of Stewart's Compend of Pharmacy; Formerly Lecturer and Demonstrator of Materia Medica and Pharmacy, Jefferson Medical College, Medico-Chirurgical College, and Woman's Medical College of Pennsylvania, Philadelphia; former Chairman of the Section on Materia Medica, Pharmacy and Therapeutics of the American Medical Association; Charter Member of the American Therapeutic Society, American Pharmacologic Society, etc.

Founder of the Scientific Department System of the Manufacturing Chemical and Pharmacal Houses and the Working-bulletin System for the Collective Investigation of Materia Medica and Food Products; Formerly Associate Editor of the Therapeutic Gazette, and Editor-in-Chief of Merck's Archives.

The following biographic and chronologic statement is incomplete owing to lack of space in this bulletin, but it will serve its purpose, and that is to call attention to the evolution of a plan for collective investigation and classification of the newer materia medica originated in 1881, and gradually developed to the time of issuing the second edition of this bulletin, Oct. 1, 1906.

During the 25 years of its development the author has had the cooperation of many leading members of the medical and pharmaceutical professions to whom proper credit is due.

The question may well be asked, why is it that a plan which has had general professional endorsement has not been carried out before? The answer is, conflicting commercial interests have always succeeded in defeating it, just as they have succeeded in defeating national legislation in favor of pure medicines and foods in spite of the efforts of those who have so long faithfully endeavored to secure a national pure food and drug law. Yet success has finally crowned the efforts in both cases. When the true value of proper standardization of materia medica and food products becomes better appreciated many who have opposed standardization will doubtless change their attitude to one of hearty cooperation, provided fairness characterizes those engaged in doing the work of investigation and classification.

Purposes of the Organization.

At the meeting for organization held at the Hotel Astor, Oct. 21, 1905, the following resolutions were adopted.

Resolved, That whereas it is desirable to associate in organization the representative men engaged in materia medica research and teaching and those engaged in the practical application of this knowledge to the healing arts, including the arts of pharmacy and drug therapeutics, for the purpose of further advancing the knowledge of the materia medica and applying the same to the treatment of the sick; and, whereas, no organization of any kind exists in which the several interests are represented, therefore be it further

Resolved, That we, representing the interests mentioned, after consultation with many of the leaders in the teaching and practice of the pharmacologic arts, do now organize an association consisting of members of the medical and pharmaceutical professions, including the experts and business managers of the manufacturing pharmacal and chemical houses, for the purpose of promoting progress in the knowledge of medicinal drugs and chemicals, and in the dissemination of that knowledge for the relief of human suffering.

Resolved, That we also include in the membership of this Society those who are engaged in the manufacture of food products, as the subject of dietetics is closely related to that of drug therapeutics.

Resolved, That the membership shall also include the publishers of literature relating to materia medica and food products, and their preparations.

Resolved, That rules and regulations shall be formulated and adopted by the Society for the protection and advancement of the science of materia medica and food products, also for the promotion and protection of commerce therein, including protection given to the publishers of literature by copyright, and protection to inventors by patent; also protection to brands of open-formula nonproprietary materia medica products and pharmaceutical preparations by the use of trade-names as word-marks for the convenient specifying of brands of the same, but with the distinct understanding that the Society protests against secrecy in medicine, and against all systems of monopoly of medicines by commercial interests except the limited control exercised for specified periods by the inventors of new and useful inventions obtained by patent grants given in exchange for the publication of such inventions for the benefit of science.

Resolved, That manufacturers of materia medica and food products generally be invited to join the Society and cooperate therewith in carrying out its objects; that such manufacturers be offered the facilities of the Society in the work of standardizing and maintaining the standards of their brands on the market; that the medical and pharmaceutical profession be solicited to specify in prescribing and purchasing medicines those products and preparations prepared in conformity with the standards agreed upon by the profession jointly.

Resolved, That the Society recognizes the authority of the United States Pharmacopeia as supreme for all official substances and the necessity of familiarizing physicians and pharmacists more generally with the principles of standardization upon which it is founded; also the necessity of inculcating that spirit of fraternalism between physicians, pharmacists and manufacturers which makes cooperation between them in jointly maintaining this great work of standardization possible; also that the Society calls special attention to the fact that only by defining and protecting the rights of the three interests involved can this cooperation be obtained and conserved; also to the equally important fact that all selfish interests must be held subservient to the one great end and object in view, namely, the healing of the sick and the prevention of disease, for which the manufacture and sale, and the prescribing of drugs and chemicals are alone justified.

The proposed Constitution and By-Laws was read, and also a history and description of "the working-bulletin" system of cooperative materia medica investigation.

Objections to the Plan Considered.

The principal objections against the original plan and its modifications urged by the several interests affected are as follows:

1. That the operation of the plan, and all modifications suggested, would "*levelize*" all materia medica and preparations to common standards, and rob the manufacturers of the privilege of advertising their products as "better than" those of their competitors.

The same objection applies to the Pharmacopeia and the National Formulary. But unless common standards exist, there can be no science of materia medica or rational practice of medicine.

Moreover, all chemical substances and galenical preparations used in medicine must be scientifically classified, and properly named. Tests must be adopted for the purpose of fixing identity, character, quality and strength, and the standards thus established maintained by national and State legislation. The medical and pharmaceutical professions in accepting their licenses to practise, accept with such license the obligation to create and maintain such standards, for all medicines prescribed and dispensed in their practice.

2. The adoption of the plan would force manufacturers to publish their trade secrets and ruin their business.

This condition could not arise should the medical and pharmacal laws limit the practice of pharmacologic arts to duly licensed physicians and pharmacists, organized fraternally. It should not be possible for any person, without a medical or pharmacal education, to set up as a manufacturer, and conduct a combination practice of pharmacy and therapeutics at wholesale without license, when the laws prevent individual physicians and pharmacists from practising without license.

3. That the plan of The American Pharmacologic Society provides for the payment of materia medica experts from a fund contributed by persons financially interested in the investigated products and their sale, is impracticable because the results secured would be favored by the investigators in the hope of a monetary reward.

The Society, not the manufacturer, selects the experts, and pays them for their work, and the amount paid in each case appears in the annual report of the treasurer; beside, these objections could only apply to *therapeutic opinions*, not to expert work in chemistry and pharmacology in which instruments of precision are employed, or methods of research adopted, which admit of verification. Also the names of the investigators, and methods employed for obtaining their results, must be given, to render them scientifically available.

4. Another objection to the plan of the Society is the doubtful control over the advertising of the products marketed under the auspices of the Society, such as: "What is to hinder the manufacturer from resigning his affiliation with the Society after a time, and then advertising his product to the lay public in a misleading manner, claiming professional and scientific indorsement?"

The contract with the Society and its plan renders this impossible, since the By-Laws of the Society, and the written contract entered into by and between manufacturers under its auspices provide that all advertising or printed matter pertaining to such products shall first be submitted to and approved by the Society before issued; also that when new facts are developed by the collective investigation, whether favorable or unfavorable, that they be incorporated in the working-bulletin. That at no time in the future shall the product be advertised to the lay public by the manufacturer, and all manufacturers working under the auspices of the Society are subjected to the provisions of the following By-Law:

"No statement shall be published by a member of the Society in relation to any materia medica product, pharmaceutical preparation, or method of treatment, which shall not accord with the facts relating thereto so far as obtainable. The publication of false or garbled quotations or misleading statements of any kind in regard to medicine, is justly characterized as a crime against humanity. Members guilty of this crime shall be tried by a committee appointed by the Council Society and may be expelled from membership."

5. Another objection raised is that it is impossible to fix personal responsibility for work when the experts are controlled by the manufacturers as members of their scientific departments, and that the verification of their work by employing consulting experts would not avail, as the consulting experts would naturally stand by their colleagues.

In answer to this objection attention is again called to the collective investigation feature of the plan. This feature includes the collection of all available evidence, whether favorable or otherwise, and publishing it in the bulletins of the Society "without fear or favor." The function of the Society is not to pronounce verdicts, but to publish evidence, leaving the medical profession to act on the evidence as judge.

The evidence presented by the introducers of new products is not considered by the Society as conclusive, but of value, and made of far greater value to the profession by adopting a progressive plan for the development of the knowledge of new products by means of the working-bulletin system.

To the Medical Profession:

This "Working Bulletin" represents the first attempt to place impartial, disinterested scientific information concerning advertised materia medica products in the hands of the medical profession. And what is even more important, it represents also the first of an intended series of publications resulting from cooperation between the medical and pharmaceutical professions and the manufacturers of materia medica products to promote progress in pharmacologic science and practice.

The arts of pharmacy and drug therapeutics are practised as money-making vocations. In that respect they are commercial. Both vocations are dependent upon pharmacology, or the science of drugs, and they are mutually dependent; for pharmacy is useless without drug therapeutics, and the pharmacist and manufacturer have no right to practise the latter, not being educated, trained or licensed as physicians. It is evident, therefore, that the practitioners of the pharmacologic arts should cooperate in promoting progress in the science upon which they are mutually dependent. The "Working Bulletin" System is designed to secure such cooperation.

The term "Working Bulletin" is used advisedly, as the publication does not pretend to be a complete monograph, but part of a plan for a collective investigation of new materia medica and food products under the censorship of a society composed of persons engaged in the preparation and application of such products to their legitimate purposes in a proper manner.

SYSTEM OF COLLECTIVE INVESTIGATION.

As stated by Professor Wm. H. Thompson, M.D., LL. D., in his paper read at the discussion of Diphtheria Antitoxin by the New York Academy of Medicine, in 1896, "The verdict about an alleged remedy must depend upon the findings of a jury whose members should not only be competent, but also so numerous and of such difference in locality and nationality that all personal or local influences can be safely left out of account * * *. In questions of therapeutics, personal opinions, or supposed personal experiences, are so beset with fallacies that errors can be minimized only by the calculus of very large averages, and if the elements for these are not yet enough, we must be content to wait until they are."

One of the objects of The American Pharmacologic Society is to secure this evidence by a system of collective investigation. The Society will therefore distribute material for clinical investigation to hospitals, clinics, educational institutions, and physicians in private practice, and publish the results of their findings for the benefit of the professions and of science whether the information thus obtained is favorable to the sale of the product or not.

It is manifest that the success of the plan is dependent upon cooperation between physicians, pharmacists and manufacturers. If they cooperate by becoming members of The American Pharmacologic Society and doing the work outlined, there can be no question regarding the success of the plan. If they regard each other with suspicion, and refuse cooperation, the plan will perforce fail in accomplishing the purpose.

Physicians, pharmacists, and manufacturers desiring to cooperate in carrying out the plan mapped out as the work of this Society, are invited. The admission is free, but the requirements are stringent.

Send to the secretary for a Prospectus including the Constitution and By-Laws of the Society, study the plan carefully, then, if you desire to aid the Society in its work, apply to the secretary for membership.

President, Reynold Webb Wilcox.
Secretary, F. E. Stewart.
Treasurer, George H. Hitchcock.

BIBLIOGRAPHY.

The "Therapeutic Boom" and Unscientific Advertising. *Medical and Surgical Reporter*, Nov. 27, 1880.

The Materia Medica of the Future. Paper read before the Section on Materia Medica and Therapeutics of the American Medical Association, May 3, 1881.

"Resolution at Richmond." Offered in con-

nection with the above paper by Professor Dunster, of the University of Michigan.

"*Resolved,* That it is contrary to the spirit of the code of ethics for a physician to prescribe a medicinal preparation controlled by patent, copyright or trade-mark, This shall except, however, a patent upon a process or machinery for manufacture, also the use of a trade-mark to distinguish a brand, provided the article so marked is accompanied by a working formula, duly sworn to, and a technical name under which all may have a right to make and sell the same article."

This resolution was referred to the Judicial Council and rejected because it was considered unethical to recognize the principle of commercial control over materia medica products under any circumstances.

However, want of proper protection for invested capital is one of the principal reasons for the present unsatisfactory condition of the materia medica supply business. That protection might be secured by legislation granting complete monopoly of the business to educated and licensed practitioners as advocated by some; or it might be obtained by properly applying the patent and trade-mark laws to the materia medica supply business as advocated by others. In either case it is essential to progress in materia medica science, and the proper practice of pharmacy and drug therapeutics that all materia medica products employed by physicians in treating the sick, shall be scientifically classified, and knowledge of their source, properties, and methods of preparation taught in the medical and pharmaceutical colleges, and by the professional societies and press.

The object of the Richmond resolution was intended to be the first step in the inauguration of a system for scientifically classifying the newer materia medica, and, at the same time protecting the commercial interests of all concerned. Since its rejection in 1881 the attitude of the American Medical Association has been completely reversed by change in professional sentiment, and protection to capital invested in the materia medica supply business by patents, not only on processes, but on products as well, is officially recognized by the Council on Pharmacy and Chemistry.

Proposed Investigation of the Materia Medica of the World Under the Auspices of the Government of the United States. Plan submitted to the Smithsonian Institution, May, 1881, and endorsed as one of the most important plans ever presented to that institution. Working-bulletin system of collective investigation suggested by Professor Spencer F. Baird, Honorable Secretary of the Smithsonian. Plan defeated by conflicting commercial interests.

An Old System and a New Science. Published by George S. Davis, 1881. Working-bulletin system described. Tonga case cited. Richmond resolution vindicated.

Commentary on the Resolution. By Hon. James B. Dill, Esq., now Judge on the bench of the N. J. Court of Errors and Appeals, and Hon. Frederick H. Betts, of the New York Bar. *Therapeutic Gazette*, March 15, 1882, p. 97.

A New Scientific Work: Scientific Investigation of the Materia Medica of the World under Governmental Auspices. Working-bulletin system again suggested. *Therapeutic Gazette*, Feb. 15. 1882, p. 44.

The Relation of Pharmacy to Therapeutics. Lecture delivered before the Alumni Association of the Philadelphia College of Pharmacy, Nov. 13, 1883. Plan of collective investigation of newer materia medica under governmental auspices described and indorsed.

How Physicians Can Aid in the Elevation of Pharmacy. Paper read before the Philadelphia County Medical Society, June 25, 1884. National pharmacologic laboratory and national pharmacologic society proposed. Discussed by Professors H. C. Wood, Joseph P. Remington, Frank Woodbury, L. E. Sayre, Henry Leffmann, and others. Endorsed by Professor H. G. Beyer, Curator National Museum, as calculated to be of the greatest advantage to science and benefit to the American people.

A Proposed Investigation of the Materia Medica of the World by the Government of the United States. The working-bulletin system again described. Read before the Ninth International Medical Congress, Washington, D. C., Sept. 5, 1887.

Proposed Investigation of the Materia Medica Under the Auspices of the United States Government. Paper read before the Section on Materia Medica, Pharmacy and Therapeutics of the American Medical Association, May 8, 1891. Congress memorialized.

Preamble and Resolutions. Officially Adopted by the American Medical and American Pharmaceutical Associations. Work of the Section on Materia Medica, Pharmacy and Therapeutics of the American Medical Association, and of the American Pharmaceutical Association. Proceedings of the American Pharmaceutical Association for 1897, p. 90.

Reports of Committee on National Legislation of the American Pharmaceutical Association for 1896, 1897, 1898 and 1899. See proceedings American Pharmaceutical Association for years referred to.

Proposed National Bureau of Materia Medica. Published in the *Journal of the American Medical Association*, April 27, 1901, and editorially indorsed.

The Relation of the Pharmacist to the Physician, and the Relation of Pharmacy to Materia Medica and Drug Therapeutics. Read before the American Therapeutic Society at its 1901 meeting. Published in *American Medicine*, July 20, 1901.

Proper Introduction of Materia Medica Products to Science and Brands of the Same to Commerce. Read before the American Therapeutic Society at its 1892 meeting. Published in *The Therapeutic Monthly*, May, 1902.

Report of Committee on Proposed National Bureau of Materia Medica. Appointed by the President of the American Therapeutic Society. *Therapeutic Monthly*, May, 1902.

National Bureau of Medicines and Foods. Organized and chartered in New Jersey in 1901. Reynold Webb Wilcox, M.D., LL. D., President; F. E. Stewart, Ph.G., M.D., Secretary; H. H. Rusby, M.D., Treasurer.

National Bureau of Medicine and Foods, University of Southern California Center. Organized at Los Angeles, October 15, 1901. President, N. G. Brainerd, A.B., M.D., Dean of the Medical Faculty; Vice-president, Geo. L. Cole, M.D., Professor Materia Medica and Therapeutics; Secretary, H. Bert Ellis, A.B., M.D., Professor Ophthalmology; Treasurer, F. D. Bullard, A.M., M. D., Professor Toxicology and Clinical Chemistry; Directors: Joseph M. King, M.D., Associate Professor Materia Medica; L. S. Stabler, M.S., Ph.C., Professor of Chemistry; E. H. Fosdick, Chemist, Los Angeles.

National Bureau of Medicines and Foods, San Francisco Center. At meeting for organization, held in the office of Henry Gibbons, Jr., M.D., Dean of Cooper Medical College, Dr. Philip Mills Jones, of San Francisco, offered a resolution to reorganize the bureau under the joint auspices of the American Medical and American Pharmaceutical Associations. Carried. Dr. Jones appointed chairman of Committee on Reorganization.

National Bureau of Medicines and Foods. Joint Committee. Members of American Medical Association Committee: Drs. E. Elliott Harris, New York; N. S. Davis, Jr., Chicago; Solomon Solis-Cohen, Philadelphia; H. Bert Ellis, Los Angeles, Cal.; Philip Mills Jones, San Francisco.

Members of American Pharmaceutical Association Committee: Dr. H. H. Rusby, New York; Mr. James M. Good, St. Louis; Dr. C. S. N. Hallberg, Chicago; Dr. A. B. Lyons, Detroit; Mr. S. A. D. Sheppard, Boston.

Chairman of the Joint Committee, Dr. H. H. Rusby; Secretary, Dr. Philip Mills Jones.

Report of the Joint Committee. This report was favorable, but the plan was defeated by conflicting commercial interests. The plan elaborated by the Joint Committee omitted the collective investigation feature, but adopted the major part of the rules and regulations for standardizing the newer materia medica.

Council on Pharmacy and Chemistry of the American Medical Association. This body was immediately afterward organized, and adopted most of the rules and regulations of the proposed bureau, but did not adopt the part of the original plan of the National Bureau of Medicines and Foods, which called for the collective investigation of the newer materia medica.

American Pharmacologic Society. Proposed in paper read before the Philadelphia County Medical Society in 1884. Organized at the Hotel Astor, New York, October 21, 1905.

Reasons Why Physicians Should Support the Pharmacopeia. Read before the American Therapeutic Society, May, 1906. Published in the *Druggists' Circular*, June, 1906, and *American Medicine*, September, 1906.

The American Pharmacologic Society and Controlled Materia Medica Products. Published in *American Medicine* for May, 1906.

The Working-bulletin System for the Collective Investigation and Classification of the Newer Materia Medica. Read before the British Medical Association at the Toronto meeting, August 22, 1906.

RECENT EDITORIAL OPINIONS.

Journal of the American Medical Association.—Colonies for Epileptics: Not all epileptics need care in the same class of institutions or even in any institution at all. Probably nine-tenths of those not practically disabled by the disease could best be cared for in epileptic colonies. A few are really dangerous and require restraint. Epilepsy is not absolutely an incurable disease and the curative function of institutions should be widened by the careful study of the disease.—Milk and Alcohol in Hospitals: Sir Victor Horsley stated at the recent meeting of the British Medical Association in Toronto that the proportionate consumption of milk and alcohol in the London hospitals has been exactly reversed during the past 40 years as the result of the advance in medical knowledge regarding the efficiency of alcohol in the cure of disease. Forty years ago the expenditure for alcohol was $40,000, for milk $15,000. Now the figures are reversed. The introduction of asepsis and antisepsis has had something to do with removing the supposed necessity for stimulants in cases of sepsis but the change represents very nearly the reversal of feeling in the minds of physicians as to the merits of the two articles. It is very probable that this difference of attitude will continue to be even more marked as the years go on. That not such a complete change has occurred in America is partially due to the fact that our physicians were never so free in the use of alcohol for medicinal purposes as were their British colleagues.—The Life Insurance Examiner and the Agent: The attempt of an agent to use an examiner in trying to coerce an individual to make application for insurance often subjects the examiner to insult. The latter should never be asked to make an examination until an application has been made. The insane haste to rush applications to the home office and to force policies on persons who have not been convinced they desire them, prevents more exhaustive and leisurely examinations in doubtful cases.—CATCHY NAMES AND THEIR DANGERS: A death in St. Luke's Hospital, Chicago, occurred from the accidental use of a solution of atropin when urotropin had been ordered. This directs attention to the prevalent manner of naming new remedies, proprietary in nearly every instance. Why not get rid of all the varied names of drugs and adopt the correct one—the official name? In hospitals where young physicians are taking their first work in actual practice, it would be worth while to prescribe remedies under their official titles.—A NATIONAL DEPARTMENT OF HEALTH: The paper of Professor Norton sets forth fully the economic side of this subject. The importance of the office is magnified and its necessity as a special department with a cabinet officer at its head is accented by the international complications which arise and involve sanitary questions of the highest importance. For the economic reasons given by Professor Norton the advisability of such a department is all the more obvious. Finally is the important truth that what is right is also profitable.—THE AMERICAN MEDICAL DIRECTORY.—A PRELIMINARY STATEMENT: The directory to be issued by the Association is only a secondary and subsidiary matter subordinate to a much greater work. It is a compilation of a part of the facts regarding each physician as they now appear on the records of the Association. This information is at the disposal of State licensing boards or medical colleges to trace those who present forged credentials or in any other way attempt to deceive. This has involved a vast amount of work which the States or the national government could not be expected to do and which was too expensive for private enterprise.—THE ALCOHOL QUESTION: The value of alcohol generally and of its use as a drug was dwelt with at various times during the meeting of the British Medical Association at Toronto. Diverse opinions were expressed but nothing appreciably new was added. Regarding most features of the question we are still where we were.—FOOTBALL FATALITIES: Though the season is just opened, deaths from football are being announced. Modified rules apparently have not been adopted or have failed to eliminate serious accidents. It is difficult to understand why there should be so much insistence on continuing Rugby football as played here with its rough features. Modification of the rules has been opposed because it was said interest would be lessened and the crowds less. If gate receipts are to be the supposed justification for rough play that draws a crowd, then the epithet of Maxim Gorky, that we are an essentially brutal people, cannot be gainsaid.—PATHOLOGISTS IN HOSPITALS FOR THE INSANE: Illinois has arranged for civil service examinations to select pathologists for her hospitals for the insane. The general result of supplying pathologists should be to put the daily routine work on a higher plane and little by little increase our knowledge of insanity and other nervous diseases. The two most important steps that can be taken by a State hospital for the insane is to divorce its management from "politics" and to provide men and means to place its psychiatry on a firm progressive basis.

Boston Medical and Surgical Journal.—COMPARISON OF THE RECENT MEETINGS OF THE AMERICAN AND BRITISH MEDICAL ASSOCIATIONS: Much difference as to method was evident. At the British Association there was absence of legislative discussion and a much shorter time devoted to the section programs, giving the effect of a much more leisurely meeting. The American Association might well try next year the plan of four forenoons of section meetings with the afternoons devoted to general meetings and social affairs. The British custom of having several vice-chairmen for each section allows a pleasing rotation of presiding officers. In limitations of papers and discussions, British chairmen might learn much from most Americans. It appears unwise to make symposiums the general plan of meetings as was done at Toronto.—THE NEW HARVARD MEDICAL SCHOOL BUILDINGS: These buildings represent an equipment for medical instruction probably unequaled, either at home or abroad. The buildings, however, represent but a step in the constitution of an efficient medical school. What Harvard needs now as never before is a group of men devoted to teaching and others equally devoted to the investigation of new problems. The school is wise in admitting to its courses men who are not candidates for a degree, as from their ranks may come unusual men for the work of special investigation. The greatest need of the school now is a hospital of its own clinical teaching.—HEART BLOCK AND

CARDIAC ARRHYTHMIA: A symposium on heart block was an interesting feature of the Toronto meeting. The anatomical basis is the muscle bundle of His appears to be demonstrated but much work on the pathology of the heart with reference to these fibers is yet to be done. Their knowledge opens a very important chapter in cardiac disease.—THE PROSPECTIVE STUDENT OF MEDICINE: There is a tendency both in Europe and America toward a decrease in the number of students of medicine. A recent circular issued by the Association of French Physicians urges students not to enter the medical profession too hastily. The practical working out of this idea would not always result as anticipated. The profession is not overcrowded by the best men, and these are often not known until after they have begun the study of medicine or even until they are practising. To discourage students from entering medicine or any other profession by pointing out to them the overcrowding and difficulties in the way will not conduce to the best interests of that profession. —RELATION OF PHILOSOPHY AND PSYCHOLOGY TO MEDICINE: The addresses at the academic session of the dedicatory exercises of the new buildings of the Harvard Medical School referred almost entirely to the healthy *body*, but little to the healthy *mind*. This is a tradition far too strongly fixed and needs to be counteracted. Two sciences, philosophy and psychology, contribute directly to success in the art of healing as applied to the mind. These the college student should be urged to study and the medical profession should aim to place in practical form before the public.—APHASIA: Marie's preliminary paper upon aphasia is most startling and revolutionary. He claims that Wernicke's aphasia is due to intellectual defect and not to the destruction of special centers of language. Broca's aphasia is Wernicke's plus anarthria. Marie's preliminary communication is based on a study of 100 cases with 50 autopsies which, with his high reputation, make his conclusions of extreme interest.

Medical Record.—THE HUMANITIES AND MEDICINE: The present age is called practical, the age of the young man. He must be fitted for life work in the briefest possible time or he will be distanced, and superficiality is the logical outcome of this tendency. Reaction, however, is bound to come and the wisdom of age will again receive recognition. One sign of reaction is renewal of the discussion concerning the value of the humanities in medicine. There is no better training for the young brain than the study of Greek and Latin. We may confidently hope the day is not far distant when a knowledge of Greek and Latin, especially the former, will be required of all who seek admittance to a school of medicine.—EFFECT OF TEMPERATURE CHANGES ON THE STOMACH: There is still a wide difference of opinion between physiologists and clinicians as to gastric sensation. Neumann does not accept the view that this organ is insensible to heat and cold and has shown by the introduction of fluids through a double tube and through a fistula that it can clearly appreciate changes in the temperature. This knowledge may be of value in the differential diagnosis of gastric diseases.—A PIONEER MEDICAL MAN: Dr. Ybarra has performed good service in unearthing the records of Dr. Diego Alvarez Chanca, who came with Columbus in his second voyage in 1493, probably the first or at least one of the first physicians to land on these shores. He saved the life of Columbus on more than one occasion and gave the first written description of the ethnology and anthropology of America. He was physician-in-ordinary to the King and Queen of Castile and Aragon.—THE SANITARY ASPECT OF THE REOCCUPATION OF CUBA: The disturbances making necessary the reoccupation of Cuba by the United States are opportune from a sanitary viewpoint. Yellow fever is in Havana and is suspected in other towns. The chief of the sanitary department has done admirable work in the face of obstacles but in such a country with its unsanitary traditions of centuries, only military authority can enforce his decrees. He should have the power of the United States behind him. For many years to come, even after the civil administration of the island is again in the hands of the Cubans, the sanitary department should be under the army or the Public Health and Marine-Hospital Service of the United States. In this way only can Havana be kept a harmless neighbor of our gulf and south Atlantic cities.—THE SALOON AS A DISSEMINATOR OF DISEASE: Although the saloons here are far cleaner and better ventilated than those of Great Britain, there are many in which diseased and unwashed loafers spend most of their time. In addition to tuberculosis many other affections may be spread by the saloon, among them being diphtheria and other infectious diseases, syphilis and almost all forms of skin diseases. There is one lamentable feature of drinking in Great Britain that is absent here, namely, drinking by women in public bars. On the whole we may congratulate ourselves that although we are not at the front in hygienic matters, at least our saloons will compare favorably with those of other great English-speaking people.

New York Medical Journal.—Landry's Paralysis and Paralytic Rabies: Writers are by no means agreed as to the pathology of Landry's paralysis. Remlinger has recently declared that the condition has no unity, anatomic, etiologic, or pathogenic, and may be caused by lesions of the cord or of the peripheral nerves. It is not a distinct form of disease but a group of symptoms. Remlinger also reminds us that the virus of rabies may cause the appearance of this syndrome, reporting a case and referring to others. Inoculation experiments should be made from every person who dies from Landry's paralysis to determine if the case was really not one of rabies.—Respect for the Palate: Depriving sick persons of savory food is to some extent a sin of omission. When disgusting medicinal preparations are prescribed the offense is one of commission. A contributor deserves gratitude for having pointed out various means of making medicines as little repulsive as possible. The *Journal* will welcome suggestions for palliating the unpleasantness of medicines.—African Sleeping-sickness: King Leopold of Belgium has offered a prize of $40,000 for the discovery of a remedy for this disease and a credit of $60,000 in the Congo estimates for the expenses of prophylactic research. He regards the disease as of international importance.—Detection of Carbonic Oxid in the Blood: It has been pointed out by Abrest that the spectroscopic examination of blood for this purpose is only suggestive rather than conclusive. The test is one for the chemist rather than for the physician and requires enough blood, at least 50 cc., to furnish an appreciable quantity of gas for identification.—The Industrial Electric Current and the Eye: Sourdille finds that incandescent lighting in private apartments, especially for office use, is capable of exciting visual disturbances. These include fatigue, obstinate conjunctivitis, and accommodative asthenopia. The current need not actually pass through the body. The effects may be due to chemical rays or to radiations of which we do not know the nature.—Tetany Mistaken for Tetanus: Guinon records this error, the condition coming on during a mild attack of typhoid fever two weeks after receipt of an injury to the ankle. Such cases as this may have been reported as "cured tetanus." The error is not liable to result in more than the erythema which may result from the use of tetanus antitoxin.—Cheese in Therapeutics: Gallois treats some cases of gastroenteritis in infants by substituting for some of the nursings a mixture of milk and Swiss cream cheese. He presents clinical evidence of good results, whatever we may think of cheese as an infant's diet. Incidentally Gallois states that he uses a mixture of butter and cheese as a substitute for meat in the diet of diabetics.—Medical Fees: The *World's Work* in editorials on this subject has gone quite wide of the mark, by stating that only the pauper and the millionaire can have the attendance of the most skilful physicians and surgeons. This exaggerated statement is based on the false supposition that only those professional men who charge very high fees are competent. The physician or surgeon oftenest mentioned in the papers is far from being the safest or the surest, though his charges may advance with his notoriety. If people would consult only their family physician and let him recommend their consultant or surgeon, there would be little danger of a charge beyond their means.—Extrapharmacopeal Remedies: The observation that the Pharmacopeia is a mirror of its time is true only to a certain extent. In the proceedings of the New York State Pharmaceutical Association the committee on new remedies enumerated nearly 1,000 articles introduced into medicine too recently to find their way into the Pharmacopeia. The twelfth edition of Martindale and Westcott's Extra Pharmacopeia also names many new compounds some of which are doubtless doomed to an ephemeral existence. It is not, then, the official Pharmacopeia that is to be regarded as a true mirror of its time, but rather the extra ones and the reports of committees of associations.—Delineation in Medicine: The art of drawing has a value in medical study and teaching that is almost universally underrated. In addition, an offhand diagram will often go far in explaining some point to an intelligent patient. Reasonable proficiency in drawing should be imparted in school to every child who is at all capable of acquiring it.—Electric Sleep: Several investigators have devoted considerable attention to the experimental production of sleep by means of an electric current passed through the brain. The current used is of low tension with interruptions of moderate frequency. Sleep, or at least the abolition of the power of voluntary movement and apparently of sensation, may be induced suddenly or gradually. It has been practised in one instance on a human subject. A practical application suggested is to thus do away with the imaginable instant of pain felt by electrocuted criminals.—OXYGENATED DRINKS: A series of oxygenated drinks are now on sale in Paris, the carbonic acid gas ordinarily used being replaced by pure oxygen. They are more stimulating than the old, and the uncomfortable feeling of distention, after their use, passes away sooner. In general they are brisk, grateful fluids, always pleasant and tonic. Experiments with them in America would be worth while.

The Medical Press.—"MINOR DOCTORS:" A drug trade journal advocates establishing a new order of practitioners under this title. Because considerable practice is now done by chemists and other unqualified persons it is suggested that they be given legal status. The title, doubtless to be stated as M.D., should be based on examination after a course of one year of hospital practice and a second of "minor medicine and surgery." The latter terms are presumed to mean the medicine and surgery that may be practised without any knowledge of the patient's condition. It is quite possible that the present standard of qualification for physicians is too high; it certainly could be improved without making it more severe. But establishing an inferior order of practitioner is not the way out of the difficulty.

Scottish Medical and Surgical Journal.—JUVENILE SMOKING: So far as men are concerned it must appear that the Anti-tobacco Society is fated to be numbered among the lost causes. It seems to be pretty generally agreed that the moderate use of tobacco by the adult is not injurious to health. But there is probably complete unanimity of opinion that tobacco in small quantities is prejudicial to the young. This at any rate is the opinion of witnesses before the committee of the House of Lords now investigating the question. It is curious that juvenile smoking has become a problem only in recent years, but facts brought out favor the view of most of the witnesses that tobacco should not be sold to persons under 16.

Medical Times.—A COUNTY BACTERIOLOGIST: Ontario county, N. Y., has appointed a county bacteriologist at an annual salary of $1,500, his services being free to all the physicians of the county. Aside from one or two cities and several villages, the county is a farming community of 50,000 population. It is instructive and gratifying to find a community in which the influence of the medical profession is so great and the public sentiment is so far sighted. Speaking broadly, this precedent for the United States has been established by the country physician and the farmer.

Medicine.—CAPITAL CRIMES IN CHICAGO: A Chicago paper reports 187 homicides in that city, 29 of which were justifiable, leaving 158 murders. It is presumed that the whole country is not much behind this rate and hence a comparison with other countries is instructive. In all Germany with a population of upward of 50,000,000 there are only 60 percent more murders. England and Wales with 16 times the population of Chicago have only double the number of murders. France with almost 20 times the population has only three and one-third times the murders. Canada with two and one-half times the people has only one-tenth as many murders. It is a significant fact that the law against homicides in Canada is rigidly enforced.

NEWS AND NOTES.

Antitoxin Cuts Down Deathrate.—State Health Commissioner Samuel G. Dixon has cut down the deathrate from diphtheria through the antitoxin which the State Department of Health is distributing free to patients too poor to pay for the serum. The report of the antitoxin division gives the remarkably low deathrate of 3 percent for all cases treated with State antitoxin. There were no deaths at all where the instructions of the commissioners as to the liberal use of antitoxin within 24 hours after attack were followed out.

A Possible Cascara Famine.—In the States of Oregon and Washington, which supply the world with cascara sagrada, but little bark was gathered this year. The season has just closed and the returns received show that not to exceed two carloads was peeled in Oregon, and only about four carloads in Washington. A few years ago, when the excitement in the cascara bark market was at its height, the quantity harvested was far in excess of the demand and prices dropped sharply. With the decline in value the production has fallen off, until the drug trade of the world is face to face with a cascara famine.

British Medical Congress.—Notwithstanding the exceptionally warm weather, the seventy-fourth annual meeting of the British Medical Association was the means of bringing together medical and scientific men from all parts of the world. The United States, especially Philadelphia, was well represented. Dr. Samuel G. Dixon, of the State Board of Health of Pennsylvania, made a profound impression by the superb exhibit of the means of combating tuberculosis. He had the honor of presenting the first paper of the day on this subject. The American Orthopedic Association held its annual banquet at the King Edward Hotel. Among those present from Philadelphia were H. Augustus Wilson, G. G. Davis, J. T. Rugh and J. K. Young, in the various sections of medicine. Those active in the presentation of papers and discussions were M. J. Lewis, Joseph Price, J. B. Robert, Samuel D. Riseley, L. Webster Fox, J. H. Musser, W. M. Keen, J. B. Roberts, F. X. Dercum.

To Prevent Crime in Young.—The Children's Aid Society of Pennsylvania has begun a scientific treatment of vicious and defective children in Philadelphia. The services of alienists, physicians and surgeons are used. Many children coming under the care of the society have appeared utterly deficient, mentally and morally. After expert examination and treatment, in many instances they have been rendered normal and have become useful members of society. Defects of the eyes, nose and throat are sometimes the cause of apparent deficiency. The most careful statistics are taken of each child, whose career is conscientiously guarded in every way while in the care of the society. This system has been carried on for many years with admirable results.

Indiana Medical Colleges.—A new college is planned in affiliation with Indiana University at Bloomington, to be known as the State College of Physicians and Surgeons, the first two years' work to be given at Bloomington and the last two at Indianapolis. Recently three of the old schools of Indiana united. The first annual catalogue and announcement of the School of Medicine of Purdue University, gives the reason for the merger of the medical colleges of the State as follows: "For the good of medical education, the three former medical schools of Indiana have united and have surrendered their rights and properties to one of the State universities. The Medical College of Indiana, the Central College of Physicians and Surgeons and the Ft. Wayne College of Medicine have become one, and as such have become a part of Purdue University under the name: Indiana Medical College, the School of Medicine of Purdue University."

Pace That Kills in New Jersey.—According to a bulletin from the State Board of Health for the month of July, diseases of the nervous system have shown a decided increase in New Jersey, and these affections constitute the leading cause of death in the State, there having been 382 for the month. In the population of 2,174,531 in the State, there were 2,481 deaths. Tuberculosis claimed more victims than usual, the number of deaths from tuberculosis of the lungs alone being 249. There was a falling off in deaths from infantile diarrhea, usually very prevalent in July and August. Pneumonia and diseases of the heart and circulatory system have also shown a high mortality rate for July.

One Month's Vigorous Inspection Work.—The work done by the Philadelphia meat inspectors during August in the crusade against impure meats has been the most far-reaching in the history of the city. In all 57,284 pounds of bad meat have been condemned and the work is still in progress. The condemned products include cattle, poultry, and fish. The work done is as follows: Inspections, 2,401; establishments reported unsanitary, 143; condemnations, 433; postmortems, 2,016; condemnations from postmortems, 30; prosecutions instituted, 3; special investigations. 5.

Health Boards Confer.—The first annual conference of the local Boards of Health in New Jersey, with the State Board, was held last week at Trenton, with 150 representatives from all parts of the State. Isolation hospitals were discussed and a resolution passed favoring such hospitals in every sanitary district.

Rashid, the Leper Dead.—George Rashid, the Syrian leper, whose wanderings several months ago, when he was driven from West Virginia, then from Maryland, then from Pennsylvania, and finally returned to West Virginia by the Maryland authorities, caused much public attention, died last week of heart failure in the little shanty where he had been imprisoned under guard. His body was cremated by the county authorities.

Pennsylvania Wins Vaccination Fight.—Judge W. Rush Gillan, of Chambersburg, in the mandamus proceedings brought by Attorney-General Carson against the school officials of the Waynesboro grammar school, sustains the vaccination law, excluding from the schools those who are unable to present proper certificates of successful vaccination. In his opinion he reviewed the laws concerning vaccination, and directs that this section of the health law shall be enforced by the directors and not by the teachers, taking the position that the directors, being elected by the people, are the responsible officials, and not the teachers, who are elected by the directors.

Conference of Antivaccinationists. — A State conference of the opponents of compulsory vaccination was held in Philadelphia, October 3 and 4. About 80 delegates were present. The object was to take political or other action to prevent the use of virus; to perfect plans to nominate candidates for governor and the legislature favorable to the repeal of the twelfth section of the act of June 18, 1895, which provides for the exclusion of unvaccinated children from all schools. A resolution was passed condemning vaccination *in toto*, but more especially that of sick children.

Newspaper Advertising.—A committee of the Philadelphia County Medical Society prepared the following resolutions to be acted on October 11:

1. *Resolved*, That the publication in the lay press of the description of operations, new treatment, and allied medical matters in connection with the name of the physician be condemned by the society, and that the physicians of the society, in order to prevent such publication, make such representations to the superintendents or other officers of the hospital with which they are connected, as will, so far as possible, prevent internes, nurses, employes or friends from giving information to reporters.

2. *Resolved*, That the society try to prevent reports of the papers read at its meetings from being publicly mentioned unless such publication be conducive to the public welfare. The society shall instruct its secretary or reporter to give to the press a censored report which shall always be anonymous so far as the authorship of the papers is concerned.

3. *Resolved*, That the society condemn the publication of medical interviews in connection with the names of physicians, excepting medical interviews relating to municipal sanitation and other matters of public welfare.

4. *Resolved*, That copies of all articles appearing in the press of Philadelphia relating to regular physicians of that city shall be placed in a scrap book by the assistant secretary for the inspection of members. A member whose name appears therein shall have the privilege of attaching thereto a written explanation.

5. *Resolved*, That copies of these resolutions be printed in *American Medicine*, *The Journal of the American Medical Association*, and the *Weekly Roster*.

Reciprocity in Medical Licensure.—The New York State Department of Education has announced that as a result of the conference between the States of New Jersey, Michigan, and Ohio, formal agreements for reciprocity in medical licensure have been entered into between the States of New York and New Jersey, Michigan and Ohio, during the school year just closed. The basis upon which reciprocity obtains between these States is a license earned on examinations in either one of them. The candidate must present credentials from the officials of the State Board of Medical Examiners which licensed him, showing that at the time of such application he is a reputable practitioner. Provision is made for the inspection of the qualifications of an applicant either personally or professionally when there are reasonable doubts of his qualifications. The agreement has been signed by the representatives of the State boards and the education departments and remains in force until rescinded by formal action.

Prize for Trachoma Investigation.—The Hungarian Minister of the Interior has announced a royal international prize of 1,000 crowns for the best work on the etiology of trachoma. It is required that competitors present an original contribution which represents progress of value. Papers may be written in Hungarian, German, French, or English, and must be in the hands of the jury before December 31, 1908. Communications should be addressed to Ofen Pest, I., Var, Belügyministerium. Papers that have been published will be eligible, providing that they have not appeared before January 1, 1907. The prize will be awarded at the Sixteenth International Medical Congress in September, 1909.

Crusade Against Uncleanliness.—The Massachusetts Board of Health, after finishing its active crusade against unclean dairies, foul ice cream manufactories and unfit meat supplies in the various cities and towns of the State, has entered on a study of the bakeries and found 247 "distinctly bad," 235 "not especially bad," 41 "satisfactory," and only 13 "worthy of special commendation."

For Tuberculosis Hospital.—Plans have been filed by the New York Department of Charities for a new tuberculosis hospital to be erected in the Borough of Richmond on land recently purchased near the present City Farm. The buildings will be eight in number, each four stories high, 80 by 137 feet on the ground plan, and will cost $800,000. The institution will be called the Sea-side Hospital.

Fatal Mistakes in Dispensing.—It is reported that the Superior Board of Health of the City of Mexico is studying the problem of drug store reorganization with a view to protecting the public from a recurrence of the many recent fatal mistakes in dispensing, which have been attributed to the practice of employing incompetent assistants.

American Medicine

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The "bends," caisson disease or diver's palsy has been known so long and its cause and prevention have been so thoroughly explained, it is surprising there should be any cases, at least any fatalities. The extensive operations under the New York rivers in constructing tunnels and bridge piers, are producing many fatal cases and we must expect more in the future if greater precautions are not taken. The cause of the disease is purely mechanical. Gases dissolve in liquids in proportion to the pressure, as in a soda water bottle. If the pressure is very slowly relieved the gases escape by an invisible evaporation, but if the cork is suddenly drawn, they flash out in bubbles. Men working in high air-pressure behave the same way. The blood absorbs a great deal of air, and it is entirely harmless; and if the pressure is very slowly relieved, the extra gases evaporate invisibly and so quietly that no one knows he was "charged."

The cause of bends, then, is a too rapid relief of the pressure so that bubbles of air form in every part of the body where liquids are found—heart, vessels, serous cavities, and especially around the brain and nerves. Death is instantaneous if the blood current is thus plugged by a froth or if the cardiac or respiratory ganglions are choked. In less severe cases, only small areas are deprived of blood-supply and the circulation is often restored as the gases disappear, by a reabsorption under normal pressure. Nerves are sometimes so injured that they never recover and permanent paralyses result. The treatment is the immediate restoration of the patient to the original high pressure, though even this will sometimes fail to redissolve the bubbles. Prevention is the slow relief of the pressure. Workmen, on coming out of the caissons, first enter an intermediate room or lock where the pressure is so slowly reduced that the gases evaporate harmlessly from the fluid tissues.

The loss of time in preventing "bends" is resented by both workmen and the construction companies. It is said that fifteen minutes in the lock for every atmosphere of pressure is sufficient, but the fatalities show that it is not or that there has been a violation of the rules. Something is wrong—that much is certain—but whether there has been criminal carelessness only an official investigation will tell. Certainly it is a traumatism which physicians never should see; but with our strenuosity, and contempt of life, it takes its place with that very long list of preventable accidents for which America is famous. Perhaps some amelioration of the condition might result from stirring up public sentiment on the subject.

The Philippine Journal of Science is a new departure in journalism which seems destined to be of extreme value to medicine and particularly to tropical medicine. It is published by the Governmental Bureau of Science in Manila, under the editorship of Dr. Paul C. Freer, the director of the bureau, and is the organ for all the original scientific work of the Islands. The June number is almost entirely devoted to medical papers, but even the nonmedical ones are of value to a physician for the general information they contain. It resembles the *Journal of the Royal British Army Medical Corps*, and also occupies the field of the *Journal of Tropical Medicine*, which does not seem to be popular with workers in this line. Being distinctively American, it deserves our support at home, where it should have a wide circulation both in the army and navy and also in our south among civilians.

Tropical anthropology is an important field; we hope to see the journal publish something of the ethnology of the Islands; and, above all, it would be of extreme value if there should be some investigations of the types of Americans who stand the climate the best and those who break down. Many a young graduate would like to go out to take up tropical medicine as a specialty, but is discouraged by the contradictory reports as to the climate. He should not be advised to go, if he is one of the physical types which lose health and return in a few years to be a burden to themselves and friends. So many civil physicians have left the Islands, that it would be well to know the reasons why they left and why the survivors have survived. The whole field of the relation of stature, complexion, and visual function, to health in the tropics is sadly neglected in our tropical possessions, except by one man, and there is urgent need of corroboration of his findings.

The sweet uses of adversity are as evident now as when Shakespeare—or Bacon?—immortalized them. Indeed every cloud has its silver lining. The San Francisco earthquake also did a little good when it was doing all its evil. Reports are current that many bed-ridden neurotics were able to get up and look after themselves when it became necessary. It is the same old story, as old as Adam, that when necessity intrudes her grim visage, we must do what we thought impossible. There is no mystery about the law of her motherhood to invention—nothing could be more natural. The average man will not work until it is necessary—he never invents a tool until he has use for it. The medical lesson is self-evident; for many a chronic invalid is helpless because he—or she, generally—has no necessity to help himself. His own power is not called into use, because it is not needed.

The curative value of shock is generally given the credit for the remarkable recoveries from "functional" paralyses and neurotic helplessness. Perhaps this is correct. There may have been a dissociation or breaking of the chain of nervous connections between the cerebral cells and the voluntary muscles—a break due to absence of necessity. Nature generally does not use what is useless. A shock might restore contacts which the will power alone was unable to make. Not infrequently an ignorant quack by powerful mental impression does the same, though he fails in the vast majority of his cases which are those dependent upon organic defects. Eddyism has done the same, and so has every other freak cure which pretends to be what it is not.

Earthquakes, quacks, eddyism and a visit to Our Lady of Lourdes, must then be grouped together as means of causing a powerful impression which makes a man pull himself together. We do not recommend this system of cures, for it kills too many while saving a few. Still the lesson is a valuable one, for why may we not devise means of recognizing these helpless wretches and bracing them up so that they will act like men and women? To be sure some, if not all of them, thoroughly enjoy their invalidism and resent being cured. Nothing except the presence of death due to an earthquake is sufficient to bring them to their senses. That is, they are incurable cases of acquired parasitism. When "cured" by shocks or by grim necessity, they relapse as soon as there is no further need to exert themselves. Means should be taken to put them on their own resources, though it is to be confessed that if they are poor, they drift into vagabondage, pauperism, or crime. It is not pleasant to place the rich neurotic invalid in such a class, but it is scientifically correct.

Excessive light as a cause of skin cancers has been investigated by Dr. J. Nevins Hyde,[1] who brings to the point a large number of observations which have been floating around unattached to any theory. Particularly impressive are the observations upon the paucity of cancer of the skin among the dark races. If the disease is due to a parasite, as many now believe, perhaps the irritation of excessive light on unpigmented skins may be the reason for the lack of resistance which gives the parasite a chance. Even if it is not parasitic in origin, the light may be the irritant which causes abnormal growth. If this is true, we should expect to find that in exposed surfaces, skin cancers are noticeably more common in blonds than in brunets. Further observations are demanded.

Another death of a prominent röntgen-ray operator has attracted renewed attention to the pernicious form of cancer which follows long-continued short-time exposures to these powerful vibrations. The cells are not killed outright as in the old forms of burns, but are changed in some manner. The cases do not explain the etiology of cancer in any way whatever, but they do confirm Hyde's contention that even slower and less powerful rays, such as the ultraviolet and light rays, may cause superficial epitheliomas. Carl Beck noticed many years ago that brunets were rarely burned by röntgen rays, and it would be of value to record the complexions of all these fatal cases. Extraordinary precautions are necessary, but this may be a specialty which blond physicians would better avoid entirely.

The army canteen was discussed at the recent meeting of the Section on Hygiene of the American Medical Association, where it was shown that the sale of beer in the old canteen, though undoubtedly an evil, was much less objectionable than the low dives around army posts which it drove out of existence. We can never reach perfection in this world, and our whole lives are passed in selecting the better of two things or rejecting the worse of two evils. It was assumed that every physician had that much sense, yet there were present some who thought differently, and one speaker actually stated that the increase of army drunkenness caused by the abolition of the canteen, was a step in the right direction. What is the logic of that statement in view of the fact that he makes his living by caring for drunkards? Should we presume that to be the reason why he favors an increase of drunkenness? It is a shock to know that he approves a principle of prohibition which increases intemperance in the army.

The scientific study of inebriety is greatly harmed by being too much in the hands of fanatics. One man teaches his students that alcohol is never a food, even in minute doses which are entirely oxidized, and then gives a definition of a food to cover the curious opinion—a sly trick but not science. Journals devoted to the matter are not honest enough to publish any facts favorable to the use of alcohol, and are degenerating into unscientific organs for the extension of the prohibition propaganda which fails much more often than it succeeds—and fails, too, by the way of increasing intemperance. Most ridiculous assertions are made as to prohibition of wine in the French army and beer in the German army, and it is expected that sensible people are to believe them. Those interested should tell the truth, the whole truth, and nothing but the truth and not blindly support a principle if it increases alcoholism, disease, and crime. True scientific minds would not wilfully and unreasoningly obstruct that progress toward temperance or total abstinence, which all of us desire. If a plan fails, be sensible and adopt another. The true physician advocates reduction of disease, even though it lessens his business. Only the mentally perverted and whisky dealers advocate increase of drunkenness. Do not join their ranks even if it is profitable to you.

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[1] American Journal of the Medical Science, January, 1906.

The dynamics of living matter was the subject of the lectures delivered in 1902 at Columbia University by Professor Jacques Loeb, and now published in more elaborate form (The Macmillan Company, $3.00). Loeb's work has been frequently commented upon in these columns because he has been made the willing or unwilling victim of more or less ridiculous comment in "yellowish" lay articles describing his experiments in parthenogenesis or the development of the eggs without union with spermatozoa. These results have been erroneously reported as an origin of life, and though his work in other directions has led him to the foolish opinion that living matter might in the future be made in the laboratory, the lay reports on the subject have obscured the importance of the work he has actually accomplished in the explanation of many of the phenomena of life.

Investigations of living matter are being made from two independent directions—by those who are studying vital phenomena and those who are working upon the chemical composition of living matter. Students, who like Loeb, have experimented upon living organisms, have found so many instances in which the vital action is the chemical or dynamic result of external forces, that they tend to think living substances as a mere machine, highly complex to be sure, but possessing no attribute essentially different from other chemical substances known to be dead. Whether this view is right or wrong, it has a great value to physicians, in that it emphasizes the great law that abnormal vital activities are the results of causes which it is our life work to discover and remove. The details of Loeb's work are at least of some interest although one may not agree with this extreme materialism. We cannot escape the thought that he has preformed his opinion as to life and is unconsciously interpreting his results to make them support the theory. The experiments themselves should be known by physicians, who, from their broader view, may be able to give them a better explanation.

The synthesis of proteids is the work of another set of scientists of a chemical turn of mind, who are attacking the life problem from the opposite side to that of the biologists. We would presume that they would look upon protoplasm as a mere machine, yet their labors apparently have the opposite mental effect. An enormous amount of work has been done in the direction of making albuminous substances from the elements composing them, but there is always one thing lacking—life. The things are as dead as coal. The hopelessness of the problem seems to overwhelm them, and they tend to regard life as an entity which exists in living matter as it is budded off from the present mass. If we make the material, as we undoubtedly will in time, it will still be dead.

The chemistry of the proteids is the subject of a monumental work by Gustav Mann (Macmillan Company) but based upon a similar work by Otto Cohnheim—the first of its kind. One is astounded at the immense strides which have been made in the analysis of the proteids, for the book is a mass of chemical formulas of these organic substances. Unfortunately it does not lend itself to perusal by the busy practitioner. There is room for a popular article, devoid of chemical technicalities, which will make the whole subject clear to the practising physician who has long left chemical details to the chemists for whom this work is written. The subject is one upon which all of us should be fairly well informed, as it will aid us in our own work with diseased forms of proteid, and it helps decidedly in the solution of the problem of the origin of life.

The life of a multicellular organism is a matter apart from the life of the individual cells composing it. By one showing, the body is merely a lifeless corporation or society of cells which have united and specialized for mutual aid and ultimate survival. It may "die" and yet every cell still remain alive, and in lower or primitive forms each cell is able to reproduce a new organism. Even in the higher forms, some of the cells, as the epithelia, may be grafted from a recently dead body upon a living one. The death of an organism is said to be merely a cessation of cooperation—a view held by some who still believe that life is an entity residing in the individual cells. All this takes most of us too far from our moorings to be acceptable. Yet it must be confessed that we have as yet no definition of life or death, which will stand criticism by both materialists and vitalists. We need more light, and these new works, though acceptable contributions, do not prove anything scientifically.

Tests for death occupy considerable space in medicolegal literature, and yet they leave much to be desired in the way of certainty. There is astonishingly little evidence that anyone is ever buried alive, and even if true, suffocation would prevent regaining consciousness. The stories of suffering revealed by opened coffins are merely old wives' tales for stormy winter evenings when weird shadows were cast by the fireplace, but they have created a popular idea that burial alive is common and that we must have a sure test for death. Yet there is no good definition of death, and we can never have a test for the unknown. To Loeb and his school, life of protoplasm is merely the total of its reactions as a chemical machine—a theory already venerable with age but no nearer proof than it was 2500 years ago.

Resuscitation of those apparently dead has been fairly common. The startling thought has been announced that perhaps they were really dead, that is, the body had ceased its activities and "team work" was ended. It was like a factory in which work had stopped but the workmen were still standing around idle though ready to begin if the machine were started again. It needed someone to turn on the steam, or correct some defect or breakdown. If he did not appear, permanent death resulted, and if he succeeded, he brought the dead to life. It will take more than ordinary courage to accept this idea, for most men think that there is a vital principle, "life," and when it departs, it does not return. Resuscitation means that it had not departed, but would have done so if timely aid had not been given to hold it. The subject is of interest from the point of view of the tests of death, for if it is true that "life" can temporarily cease, then it is possible to have our tests tell us the body is dead, and yet it may become alive again, that is, we never can have a sure test for death. This is too startling to be acceptable to most men at present. They prefer to believe that once dead we are dead forever, and that it ought to be possible to say when the body is dead.

Science is harmless to theology—it may be distinctly beneficial, indeed it generally, if not always, sustains the religious instinct. No one, then, need be afraid of knowledge which will only make him a better man. Charges of irreverence emanate from unenlightened minds. The clergy, as well as physicians, may profitably take up these life studies as a side issue which will enlighten their real work and make it better. They will find material cause for what they consider original sin. Many a naughty child merely needs a laxative or other physical help, and much crime is a result of bad training, bad food, or other causes of bad development. Clergymen and physicians may join hands in that great work of prevention which is now just being organized, or, rather, is just being discussed. Every bit of investigation into vital phenomena merely puts us a step nearer our ultimate hope of preventing all abnormalities of vital phenomena. To clergymen it may hold out the hope that the resurrection of Lazarus was a scientific possibility.

The fee for insurance examinations has occupied considerable space in current literature and much attention in medical societies. We have directed attention repeatedly to the great harm sure to result to policy holders from the present plans of the companies to reduce the fee below a point where the best men can afford to do the work. It now appears that many of these examinations are not honest—that is, they are made so perfunctorily that there is no surety even that the specific gravity of the urine, for instance, is ever taken, or the pulse counted by some examiners. That is, the company gets just what it pays for—three dollars' worth—and no more. In many localities the better element in the profession is refusing to make the examinations at that rate. It is good to know that there is a disposition to insist upon a graded fee of about one-half of one percent of the face of the policy. The policy holders should take this matter up, for they can rest assured that if they can force the companies to pay more for these examinations there will be cheaper insurance because safer risks will be taken. This is one matter in which the new economy is false. Medical associations here and there are taking the proper course of refusing to examine unless the minimum fee is $5 and we hope to see the good work extended.

Life insurance without a medical examination of the applicant is a very old suggestion and it is now under serious consideration by one of the large companies. The plan adopted will doubtless be in the direction of a mere return of the premiums plus reasonable interest if the death occurs soon, and increasing the amount paid to the beneficiaries according to the time elapsing between insurance and death. After a few years—say ten or fifteen—there will be full insurance, for survival means that the policy holder was not afflicted with any of the diseases which carry off the insured in the early years. There is a possibility that such survival will entitle the insured to more protection for his premiums than at present, for it is an index of still further prolongation of life—more valuable indeed than an original examination. It proves that he was healthy originally and had probably remained so. There is no reason why this new form of insurance should not be cheaper than the present straight life plan. By all means let it be adopted at once.

The objections to indiscriminate insurance are of some weight. In the first few years it is merely a savings bank, which really does not insure full payment of the policy. This objection is very superficial. If the applicant desires immediate insurance, a searching medical examination secures it and he is charged a fee which is big enough to attract the best men in the profession to the work. The advantage is supreme, for it gives ultimate insurance to a large number of applicants who are rejected yet who subsequently attain the average life, as figured in expectancy tables. Its further advantage is the total elimination of "graveyard" insurance, which is rumored to be sufficiently common as to increase death losses unduly. Life insurance is still too expensive and tends to drive poor men to the small unstable cheap companies which have so frequently failed, and every means must be taken to put it within the reach of every man. It is not a question of the ultimate failure of the standard companies which have now proved their stability but one of economy, and of extension of insurance to every man in the country.

The word degenerate has become so degenerate itself that there is urgent need to remove it from the medical vocabulary. It was once scientific for it expressed an important theory.—Morel, the great French alienist, applied it to disappearing neurotic families, under the mistaken impression that the condition invariably increased from generation to generation until the offspring were not variable or until sterility ended the tragedy. That was a half-century ago, but words change wonderfully in meaning in fifty years, particularly if they are misused by laymen. New meanings are given to them and the original significance is drowned. One class of degenerates has so occupied the public mind that the word is now used to express the morally depraved.

Less than half our criminals are degenerate in the sense in which the word was first used. The majority of them are normal men who have had the bad luck to be early thrust into bad surroundings where they were taught evil. If their moral instruction and physical training had been right and if the examples they copied had been moral, they would have developed into normal citizens. More than one thinker is now blaming society for its own parasites whom we group together as degenerates. The word has therefore outlived its scientific usefulness—is worse than no word at all for it gives a false impression. A new word is needed, but unfortunately the condition, which it is intended to name, is difficult to describe because it is not well defined in our own minds.

Degeneration is a Modification of the Protoplasm of the Developing Organism.—It is due to some adverse condition, such as poor nourishment, bad surroundings, intrauterine poisonings by metals, alcohol, syphilis, or other infections, or indeed the cause may antedate conception. The ovum is materially unfit to develop normally and may be forced into some modified form, or it might be apparently normal when born, but lacking in power to resist later adversities. The condition is not necessarily transmitted to offspring, and is therefore a temporary affliction of one or more generations, though prone to become worse until the line dies out. It is a modification of heredity, yet every modification, such as a mutilation for instance, is not evidence of degeneration. Consequently it is in sore need of a new descriptive term to replace the disabled "degeneration."

The specialization of teachers and investigators is coming about slowly in this country as in Europe. A teacher is in honor bound to teach what has been discovered and must perhaps treat new things with too scant courtesy until they have been generally accepted. The teacher must be behind the times for he is a follower and not a leader. When teachers had no time to take up advance work, conservatism ruled, and new ideas required twenty years to get a hearing. This has been the blot upon all schools, lay as well as medical. It has long been recognized, then, that there should be a class of workers set apart to learn new things, and to abandon teaching entirely. Europe has taken this step and the results are superb. From England, France, and Germany, we have received a deluge of scientific discoveries which have revolutionized our ideas and practice, and have had a profound influence upon civilization. It was work done by investigators, not teachers.

The Rockefeller Institute for Medical Research in New York was formally opened May 11, 1906, and it marks an epoch in America. Here, too, we are to have men who are to abandon teaching to the conservative followers, and are to enter the wilderness of the unknown, cutting roads for others to follow. They are scientific leaders who have already made discoveries which form the wisdom of this new departure. It is true that a man cannot be a good teacher and research worker at the same time—follower and leader, too. He must specialize, and this new institute, by making specialization possible, is a distinct step in advance. We hope, then, that future discoveries will not take the proverbial twenty years for acceptance. The discoverers will be the authorities—not the teachers. More institutes of this sort are urgently needed, especially those devoted to functional diseases and tropical research.

Choroiditis of owls and other night birds confined in zoological gardens, and the similar conditions said to occur in men who are exposed to excessive light, are facts which go a considerable way in explaining the use of the great amount of pigment found in those who are exposed to great light in their normal environment. It is a hint which might explain many other diseases of obscure origin. The complexion of the patient should be carefully recorded in every disease, not only in those of the eyes. In time it is quite likely that we shall find that some of us are not as well protected as others, and suffer from complaints which they escape.

CORRESPONDENCE.

ANATOMIC NOMENCLATURE.

An Open Letter to Professor Lewellys F. Barker.

Dear Dr. Barker: Through absence from home I have but just received from the publishers your "A Description of the Basle Anatomical Nomenclature [B N A], advance sheets from Dr. Lewellys F. Barker's forthcoming book, 'Anatomical Terminology.'" I rejoice that the subject is to be so fully and ably presented to English-speaking teachers and students of anatomy. Although many of the terms of the [B N A] are not preferred by me yet—pending the expected eventual general acceptance of my own—I should hail their provisional adoption, to the exclusion of their numerous even less worthy synonyms, as enabling me to replace a "shot-gun policy" by riflepractice.

I take for granted that the paragraph on page 5 was intended to represent justly my own share in terminologic discussion. Later I may comment upon certain points, *e.g.*, the alleged "obscurities of the system" (which—in view of my long preaching and practice of *clearness* as the first essential of scientific composition—you must pardon me for regarding as subjective), and the nature and extent of my philologic transgressions, in which connection I may refer to a paper read, by invitation, before the American Philological Association last winter. Now, in view of the fact that all my publications upon the subject either have been sent you or are otherwise accessible, I must express surprise and regret that the footnote (translated from His) should cite only three of my less extended contributions (two of them privately printed) without mentioning the earlier, the later, and the more comprehensive, *e.g.*, the article "Anatomical Terminology" by S. H. Gage and myself, in the first edition of the "Reference Handbook of the Medical Sciences," 1889, our "Anatomical Technology," 1882 and 1897, my "Neural Terms, International and National," *Jour. Comp. Neurology*, vol. 6 (1896), and "Some Misapprehensions as to the Simplification of the Nomenclature of Anatomy" (1898), *Science*, April 21, 1899. The several reports of the committees of the Association of American Anatomists, the Amer. Neurol. Association, and the Amer. Assoc. Adv. Science should have been specified, and it would have been simple justice to name Mrs. Gage, Gerrish, Gould, Huntington, Leidy, the Spitzkas, father and son, and others. Finally, American students should be aware that the subject was definitely brought before the American Association for the Advancement of Science so long ago as 1880, and that a committee of that body was appointed in 1884, three years prior to the date when, as stated by you, "Germany took the lead."

In my "Neural Terms," and "Some Misapprehensions," I tried to give due credit to earlier simplifiers, Barclay, Owen, Henle, etc. When you and some other American anatomists take equal pains to inform yourselves fully as to the facts and principles involved, I believe you will concede that the good and enduring features of the neurologic portion of the [B N A] had been previously adopted or proposed by me, and you will realize that the unprejudiced consideration of the terms preferred by me would have been more advantageous to Anatomy and more creditable to yourselves than their premature condemnation.

A copy of this letter will be sent to *Science* and *American Medicine.*

Very truly yours,
Burt G. Wilder.

October 11, 1906.

THE METRIC SYSTEM.

BY

WILLIAM H. SEAMAN, M.D.,

of Washington, D. C.

To the Editor of American Medicine:—I was very sorry to see on p. 240 of your August issue, a fling at the metric system of weights and measures; the more so, because I have always supposed that *American Medicine* stood for that system very earnestly.

The statement that "If we do use the metric system we will be always inconvenienced by having two standards in which to think," betrays a misapprehension of the true conditions of the case. If the metric system is used, there is no need of the English system at all. The vast "majority of patients" do not know any more about the grain and troy ounce, than they do about the gram, and not as much, if they are college people, because there is not a single textbook now used in physics and chemistry that is in the English system, all being metric. Hence all who have a college education know something of the metric system, while only those who study medicine learn the troy ounce and grain. I speak from actual observation of civil service examinations.

Second. I presume you will admit that any physician who is going to be well up in business, must know what is doing in Germany and France where the metric system only is used in medicine? How, then, can he avoid "thinking in two systems."

In the past 50 years, the metric system has planted itself firmly in the life of English-speaking people, and is now making greater progress in actual use among them than at any previous time in its history. The "nerve strain," is caused and will continue as a result of the efforts of those who oppose its introduction, who are mostly people who have no practical knowledge of the system whatever. Would you take the opinion of a man on a machine who had never used it? Yet that is the state of most of the commercial opponents of the system. They endeavor to create an absolutely false impression as to the extent of its use in Europe, and to magnify the expense and difficulty of its introduction, for which they have not one scrap of evidence. Foreign automobiles require metric fittings, and they are sold by the trade here and now at exactly the same price as American gauge spark plugs and speed meters, not a cent difference, you can get them in either system at once.

The moment the matter is looked at from a cosmopolitan standpoint, that moment the continuance of the present dual measures is seen to be impossible. The International Geographic Society cannot make a map of the world because national surveys don't agree in standards; when Peale's Mineral Springs of United States was compiled over $200 was spent in a vain effort to reduce analysis to a common standard; the matter was brought to the attention of The Am. Chem. Soc. who declared at once all analyses should be made, not in the English, but the metric system; one of the most elaborate works on ornithology, several years in preparing, had the measures all in English system; at the last moment, two years ago, when it was about to go in press, it was discovered not a single work of any note on that subject had English measure now, and a month of labor was put on it to change every dimension to metric scale. Instances of this kind are becoming innumerable, and any opposition, on the part of the medical or engineering profession, will only serve to prolong unnecessarily the difficulties of a transition which is coming as certainly at that the Gregorian calendar is now in use.

[This subject will be treated editorially in reply in the December issue.]

REPORT ON SAN JUAN DE DIOS HOSPITAL.[1]

BY

R. E. L. NEWBERNE, M. D.,

of Manila, P. I.

To the Editor of American Medicine:—In 1596, 309 years ago, the Brotherhood of Santa Misericordia established in Manila a hospital for the treatment of the civilian poor—the first civil hospital in the Philippine Islands.

Little is known of the history of the hospital, from the date of its establishment until 1656, a period of 60 years; however, the records in the Bureau of Archives show that the Brotherhood of Santa Misericordia continued in charge of the institution up to that time, when they were forced, by circumstances entailed by a series of misfortunes which began to beset the institution in 1646, to abandon the work which they had struggled so hard to continue.

Beginning with the year named and lasting for a period of ten years, misfortune followed misfortune in rapid succession. Earthquakes, violent storms, fires, failure of crops, lack of confidence, and dissatisfaction, were the reasons assigned in the petition to the Governor asking that the hospital be transferred to the Brotherhood of San Juan de Dios, which had come to the Islands in 1641 and in the same year founded a hospital in Cavite, and in 1643 another, for convalescents, in Bagumbayan. In those early Spanish days no hospitals which did not make ample provision for convalescents were considered worthy of the name.

The transfer was approved by the Governor in a decree dated March 26, 1656, and sanctioned by royal decree dated December 5, 1659, from which date the institution officially became the Hospital de San Juan de Dios.

It is probable that the Brotherhood of San Juan de Dios during their administration, which extended over a period of 210 years, did a great many things of which no record has been left, as the only mention to be found in the Bureau of Archives is, that they suffered many vicissitudes of fortune during that time. It may have been those vicissitudes of fortune that led this worthy order into politics, for which reason it was suppressed by the Governor General in the year 1866; its Superior being deported to Spain, and the priests transferred to a convent in Cavite. The decree suppressing the Order de San Juan de Dios also created an executive board to take charge of the administration of the institution.

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[1] Read at the Second Annual Meeting of the Philippine Islands Medical Association, Manila, P. I., March, 1905.

In these few words is contained all the information the Bureau of Archives has upon the history of this institution, which for 300 years has been the largest hospital in the Philippine Islands.

The history of the hospital may be divided into three periods: The first, of 60 years, under the administration of the Order of Santa Misericordia; the second, of 210 years, under the administration of the Brothers of San Juan de Dios; and the third or present period, of about 38 years, under the dual administration of an Executive Board and the Sisters of San Vincent de Paul.

The hospital building and the hospital chapel were totally destroyed by the earthquake of 1863, three years before the institution was turned over to the present management.

The Brotherhood of San Juan de Dios had, among other things, leased the Hacienda de Buena Vista in Bulacan, from which the hospital derived most of its revenue, in such a way that some one else beside the hospital was, in fact if not in name, the benecifiary. Thus it will be seen that the new management had to confront a gloomy state of affairs: A hospital in a rented building, an increased number of patients, a diminished revenue, and a lawsuit to set aside the objectionable lease of the Hacienda de Buena Vista. This lawsuit was decided in favor of the hospital in 1870, at which date the history of the San Juan de Dios Hospital as we know it today, began, though it has been conducted under the present management since 1866.

After the suit was decided in favor of the hospital, the Bulacan property was again leased and became an important course of revenue and has continued so, with a few interruptions, to this date.

In the meantime, friends of the hospital had been active. The Governor General had authorized the construction of a new building, and appointed a board, composed of ladies, for the purpose of raising revenue. This board collected many articles, through public subscription, and held their first raffle in 1867, at which these articles were disposed of by chance, realizing the sum of $29,652.11. With this sum the new hospital buildings were begun on November 9, 1867.

The work of rebuilding the hospital was continued through the efforts of this board of ladies, who arranged several theatric functions, bullfights and raffles, so that money enough was secured to continue the work until the end of 1873, when it was temporarily suspended for lack of funds.

In February, 1875, or about 13 months later, the Marchioness de San Rafael suggested the appointment of another board. This suggestion was approved by a decree of the Governor General a few days later, and in the month of April, another raffle was held by the new board, from which the sum of $30,302.24 was realized, and the work resumed. Apparently, this new board was able to keep things going, as there were no further interruptions.

In December, 1878, the Governor General appointed another board of ladies to hold a bazaar to raise funds for a hospital to be known as the Hospital de Aguas Santas. This bazaar was so successful that the sum of $5,525.73 more than was needed was collected, and by permission of the Governor General transferred to the San Juan de Dios Hospital fund.

The troubles of the new management were not yet at an end. No sooner had they adjusted the financial difficulties which they had taken over from the old management, than they were confronted by others as the result of the earthquake of 1880, which so damaged the hospital that the Archbishop authorized the loan of 20,000 pesos from the Obras Pias de la Mitra, to be delivered in two installments; the first half in December, 1881, and the other in October, 1882, with which they were able to make repairs on the old portion of the building, and to complete the chapel, which was dedicated on March 8, 1882.

The work of the hospital was considerably embarrassed by this loan, which, with interest, had to be considered as a preferred claim.

The Hospicio de San José was formerly a part of the Hospital de San Juan de Dios, being used for the convalescents. This building was also considerably damaged by the earthquake of 1880. These institutions are now only nominally connected in order that they may comply with the terms of a contract, under which the property of the Hospicio de San José was conveyed to the San Juan de Dios Hospital, about 175 years ago.

Through the revenues derived from the Bulacan property, and from certain other property located in the districts of Intramuros, Binondo, San Miguel, Ermita, and some out-of-town property in Rizal province, the hospital succeeded very well financially until the insurrection of 1896, when it was again embarrassed through lack of revenue from the Bulacan hacienda, making another loan of 50,000 pesos necessary, an indebtedness with which the hospital is still embarrassed.

The most self-sacrificing period in the history of the San Juan de Dios Hospital probably is that from September, 1898 to July 1, 1903. The Bulacan hacienda was practically idle, and the revenues of the hospital greatly diminished. On account of a legal complication, the management refused to receive assistance from the city, but to the credit of the institution it must be said that they never refused medical aid to any who applied. The boisterous American "drunk," who during this period was by no means rare in the city of Manila, was treated with the same kindness and courtesy as if he had been a pay patient. Whatever may have been the shortcomings of the hospital in the past, the kindness that was extended Americans during this period should never be forgotten.

Since July 1, 1903, the city has had a contract for 100 patients, paying at the rate of 70 cents, United States currency, a day, for each patient. No more charity patients are received in the hospital. Those who are not sent there by authority of the Municipal Board, are required to pay, some one price and some another, according to the extent of their means.

The present management of the hospital is vested in a Board of Inspectors, presided over by the Provincial of San Francisco. The internal affairs are under the management of the Sisters of San Vincent de Paul, of whom there are 25, who do the nursing, buying, and all the internal managing.

The chief medical officer is Dr. José Donelan, who is assisted by Doctors Tornel, Valdez, Diaz Perez, Burke, Del Val and Anguita. Dr. Donelan is the moving spirit of the institution. Each of these physicians receives a nominal salary of $50.00 per month, excepting the last two named, who are the house surgeons, and receive a salary of $100.00 per month.

The hospital is a close corporation. Patients are not permitted to be visited by physicians who are not members of the staff, but are required to make their selection from the list.

The capacity of the hospital is not definitely known, even to the management. There are 11 private rooms for men, and 10 for women, with ward accommodations for 500 or 600 patients. The number of patients in the hospital for 1904 will probably average 225 daily, 100 of whom were paid for by the city at the rate of 70 cents United States currency a day. The remaining 125 paid according to their means.

The hospital is used for teaching clinical medicine and surgery to the students of the San José Medical College of the Santo Tomas University. Dr. Del Val, one of the house surgeons, is professor of anatomy, and Dr. Diaz Perez is professor of gynecology in the medical college.

The institution has a pharmacy, a chemical laboratory and a bacteriologic laboratory, and facilities for the study of histology and pathology.

The San Juan de Dios Hospital has done a great work for the Filipinos, and for the cause of medical education. It could have done more, in my opinion, if it had been run as a general hospital along more liberal lines, but with that matter this paper is not concerned.

It is no reflection upon the institution, but rather a compliment, that many Filipinos will not consent to be taken to the hospital until they realize there is no hope for them. When they know they are going to die, they oftentimes express the wish that they may be taken to the hospital, where they will be attended by the sisters, and receive the last sacraments of the Roman Catholic Church. Priests live in the institution in order that they may be called quickly in the hour of need and the watchful, kind-hearted sisters never leave the bedside of the dying.

San Juan de Dios Hospital is improving every year. It is a better hospital today than it ever was before, and under the guidance of Archbishop Harty, it will continue to improve, and be a credit to the medical profession of the Philippine Islands.

THE VENEREAL PERIL.

To the Editor of American Medicine:—The letter, "The Venereal Peril," in a recent number of *American Medicine* deserves the commendation of every citizen in this country. I write to express my appreciation of its wholesomeness. *It occurs to me that a series of letters like this published in some lay journal would do much good for the public and be a source of much gain to the author.* I have ordered several copies for distribution among my patients, and I trust that they will regard it as their daily prayer book.

Wm. T. Henderson.

Mobile, Ala., August 6, 1906.

Female Scientists in the Eighteenth Century.—In Crell's "Chemische Annalen" of the year 1784, reference is made to women students attending lectures on chemistry in Berlin.

ORIGINAL ARTICLES.

THE VALUE OF RECTAL AND COLON IRRIGATION IN NEPHRITIS. SOME PHYSIOLOGIC EXPERIMENTS.

BY
ROBERT COLEMAN KEMP, M. D.,
of New York City.
Junior Physician to the Roosevelt Hospital; Consulting Physician, Gastrointestinal Diseases, to the Manhattan State Hospital, Ward's Island, etc.

In the selection of this subject, I am influenced by the following factors: First, that in a series of physiologic experiments, carefully performed, during a period extending over the past seven years, I have succeeded in demonstrating several important effects produced on the kidneys by intestinal irrigation; and, second, in the clinical application of these experiments, I have secured unquestionably the proofs of the correctness of my deductions; and, what is more important, an undoubted benefit to my patients.

In certain conditions in nephritis, I consider intestinal irrigation of great value, and believe it to be an important adjunct to other methods of treatment; thus, for example, in oliguria; in acute congestion of the kidneys; in uremia; and in acute suppression of urine.

The diuretic effects of enemas of water, given to be retained and absorbed, have been known to the profession for a considerable number of years.

Thus, for example in the year 1881, a rectal obturator was devised by Dr. Prince, to retain enemas of plain water for absorption in uremia, shock, and sepsis.

Somewhat later several others reported the value of rectal enemas of plain hot water in uremia, notably among these Dr. H. E. Forest, a Southern physician, in the *New York Medical Record*, September 19, 1891. The substitution of normal saline solution was a great advance. To whom we must give the credit of first suggesting its use by enema in uremia seems a matter of doubt. It has unquestionably been so employed for some years. The same uncertainty exists regarding the employment of normal salt solution by the method of recurrent (continuous) irrigation. In the *New York Medical Record*, December 7, 1895, I reported a case of acute uremic suppression treated with irrigation of the bowel with normal salt solution, with my old model, double-current irrigator. I believe this to have been one of the first cases, if not the first reported of uremia so treated, with a recurrent rectal tube; but that the principle of irrigation with two catheters, or a double-current catheter, had been so employed with normal salt solution in uremia several years previous. There are certain scientific facts to which I would direct attention, since they are the keynote of the entire subject.

It is my first object to call to your notice that normal saline solution has a specific effect on the kidney cells, in promoting diuresis, and that this occurs, whether the solution is administered by infusion, by hypodermoclysis or by enteroclysis. It occurs, even when such small quantities are employed that the attached mercurial manometer demonstrates no increase in the arterial tension. It takes place even when the renal nerves are sundered.

Foster's experiments regarding the diuretic effects of small infusions were duplicated by me in the physiologic laboratory of the College of Physicians and Surgeons. I furthermore experimented with hypodermoclysis and with enteroclysis, and in regard to the latter, I will give a brief description of the method employed.

On one side of a dog was placed a small vertical standard with a lever bearing a spatula at the end. The left ureter having been catheterized, drops of urine pass through a tube and fall upon the spatula. The impact of every drop is registered on the smoked paper of a kymograph, by means of a tambour, an ingenious mechanopneumatic transmitter. Each trace of a urine drop appears like an inverted V. The urine from the catheterized right ureter was carefully collected and measured, at stated intervals. The mercurial manometer, attached to the carotid artery, noted the heart impulses, on the revolving drum of a kymograph.

It was necessary to demonstrate the period when absorption from the intestine occurred and when the diuretic action began. One quart of a normal saline solution, plus 5 cc. of a

5 percent solution of potassium ferrocyanid were employed, through a recurrent irrigator; the return fluid being caught and used over again. The urine was tested every minute with iron chlorid. In 20 minutes, the Prussian blue reaction appeared, thus demonstrating the average rapidity of absorption from the intestine and the period when renal secretion begins.

Furthermore, either a small enema, or an enteroclysis with the above solution at 99° or 100° F., would increase the number of drops of urine, registered on the kymograph, synchronously with the Prussian blue reaction to the iron test. The manometric tracings showed no rise of pressure, the increased secretion being due to the specific action on the kidney cells.

I report one unique case of oliguria, the average quantity of daily urine being 14 ounces; enemas of nine ounces of normal saline solution, in three-ounce divided doses, hourly for three hours—the patient being unable to retain a larger quantity. Result, 40 ounces of urine in eight hours, thus demonstrating the action of a small enema on the kidneys. I shall later report cases of oliguria in which the patients were successfully treated by continuous irrigation. The temperature of the solution for irrigation was found to be of paramount importance. With the irrigating fluid at temperatures of 110° to 120° F. there are two cycles of increase of the urine, while from the lower degrees of temperatures there is but one, at the end of 20 minutes from absorption. In the first instance there is an average point of maximum stimulation at the end of ten minutes, corresponding to the general increase in the circulation as shown by the maximum high tension in the pulse tracings and an earlier diuresis; in addition to the usual later diuresis from absorption of the fluid. In uremic conditions the high arterial tension is due to toxemia, and the tension of the renal vessels is proportionately greater than that of the general circulation. Hot enteroclysis would aid in reestablishing the proper circulatory relations. It imparts a certain degree of warmth to the kidneys, by contiguity and, in addition, temporarily raises the temperature of the blood in the iliac vessels from 0.5° to 0.8° F.; in effect an active poultice. We have demonstrated this experimentally, as well as clinically.

The clinical experiences of Drs. William H. Thomson, Simon Baruch and others, as well as my own, establish the fact that even with high arterial tension, though there may be an evanescent increase due to the higher temperatures of the solution, yet irrigation at 110° to 120° F. causes a profuse diuresis, diaphoresis and bowel action, followed by a rapid fall of pulse tension and a marked improvement in the condition of the patient. I would advocate, therefore, continual enteroclysis at 110° F., gradually increasing to 120° F. In extreme tension, especially in full-blooded subjects, previous venesection might be indicated. In this type, with pulmonary edema, the best results are thus secured.

The second important effect produced by normal saline solution, to which I would direct your attention, is that it will diminish *acute renal congestion.* Experimentally this fact has been demonstrated by me, and reported at the New York Academy of Medicine, in a paper entitled "The Treatment of Scarlatinal Nephritis." Thus, artificial renal congestion has been produced by the subcutaneous injection of enormous doses of antistreptococcus serum, or normal horse serum. This has been relieved almost immediately by injections of normal saline solution. The kidney conditions were examined by a skilled microscopist. Clinically, it will diminish acute *renal congestion* by any of the three methods noted, infusion, hypodermoclysis, or enteroclysis.

We have frequently seen profuse diuresis and the gradual disappearance of all albumin, casts, and blood, and the increase of urine commencing even in 20 minutes (the interval of absorption) in the most favorable cases. An enteroclysis at all temperatures of the irrigating fluid has a diuretic effect. Cold irrigations, we would state, however, are only temporarily stimulant, then depressant and, when continued, on account of the depression and ultimate shock, decrease the quantity of the urine. I consider them dangerous when the kidneys are affected. The most satisfactory result is, therefore, secured at irrigation with a temperature of 110° to 120° F., preferably the latter.

Having discussed the experimental portion of my paper, I should now like to call to your attention what I believe to be the most scientific method of intestinal irrigation. The simple enema is excellent under many conditions, but it possesses the disadvantages that frequently it cannot be retained, and also that it soon cools off and the effect of the heat is rapidly lost; though, of course, we secure the benefit derived from its absorption.

The old method of allowing the patient to void the fluid about the single long enema tube is both uncleanly and inaccurate. Moreover, the adult rectum is eight inches long—the sigmoid flexure 17½ inches, and after allowing for the sphincters and space for the insertion of the tip of a fountain syringe, a rectal tube nearly 30 inches long would be required to pass through the sigmoid and reach its junction with the descending colon. I merely state anatomic facts; yet how often do we hear the fallacy described, of passing the colon tube well into the descending, or even into the transverse colon? On the other hand, the infant sigmoid lies only three and one-half inches from the sphincter.

As a further matter of interest, Howard Kelly states that the sigmoid frequently has a long mesentery and that it is often pushed up by the tube, so that it is the tube in the sigmoid and not in the descending colon that we feel. This is true also of some of the röntgen-ray photographs of inserted colon tubes. Moreover, at the Ward's Island Gastrointestinal Clinic, with a special 32-inch rectal tube with an electric light on the end, we endeavored after inflating the intestine respectively with air, water, and fluorescent media to transilluminate the sigmoid, and descending colon. An especially thin subject was selected. Many of our attempts failed, due to backward curving of the tube, thus demonstrating the difficulty of passing the long tube. We, therefore, employ chiefly the short tube and position of the patient with elevation of hips.

The ideal instrument I believe to be a continuous or recurrent irrigator. The advantages of the double irrigator are that the temperature and quantity of the solution can be definitely regulated, and that the continuous heat can be kept up. One can improvise a recurrent irrigator by means of two catheters passed through a perineal pad. A recurrent tube about five inches long is the best for practical use. *In the adult, this instrument, combined with the elevation of the hips or foot of the bed, is efficacious for a high irrigation.*

Bodenhamer was the inventor of the first recurrent irrigator and there are many types on the market. The instrument most employed in our New York hospitals is the Kemp tube. The hard rubber tube with metal center made in two sizes, medium and large, is the most practical for adult use. There is also the same tube made in metal, one in glass and a soft rubber tube for infants.

Position of the Patient.—I often employ the Sims' position, or patient lying on the side, with the buttocks extending over the edge of the bed, covered with a blanket and a pail directly beneath. On some occasions, if there is pulmonary edema due to oliguria, irrigation can be performed with the patient in the oblique, or nearly sitting upright position in bed. The tube can be passed through a perineal pad and the last pressed firmly against the anus. It is remarkable the amount of absorption that occurs in the rectum alone.

As a rule, the best method is as follows: Place the patient in the dorsal position—foot of bed slightly elevated. Discard the bedpan and protect the bed by rubber sheeting. Attach the tube of the fountain syringe to the central tube of the irrigator. The syringe should be elevated four to six feet above the patient. Attach a rubber carry-off tube, to the larger curved tube of the instrument, and drain into a pail. The outflow tube must be pinched, as its caliber is larger than the inflow; otherwise, the fluid would not pass up the bowel.

Employ from 3 to 12 gallons of a normal[1] saline solution at 115° to 120° F., at a sitting, from a pint to a quart being kept continuously in the bowels. It is well to empty the lower bowel by enema before the first irrigation. If this is impossible, the irrigation itself will produce the result desired. The irrigations may be given every two to three hours, if necessary, in severe cases, as in threatened suppression of urine. The amount of fluid absorbed during irrigation varies, depending somewhat on whether previous bowel action has occurred and also on the circulatory conditions. In any event, absorption of the fluid and stimulation of the kidneys result.

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[1] Some prefer .9 percent saline solution to the .6 percent. Personally I still employ the .6 percent for rectal irrigation.

In a case of Dr. William H. Thomson's, 13 quarts of normal saline solution were employed as a standard at each irrigation; the fluid was measured after irrigation, and deducted from our standard quantity to show the amount absorbed. In addition, to eliminate error, all material passed from the bowel within an hour after irrigation, was also deducted. These tests were carried on every day for three months. This patient on one occasion absorbed three quarts, several times two quarts, and quite frequently one and a half quarts. The general average was about one quart out of 13.

In a second case, the urine increased from 18 ounces daily to 125 ounces, after irrigation for four days—enteroclysis having been given three times daily. In a case of oliguria with double pleurisy, with effusion, in a patient of Dr. William H. Thomson's, the daily quantity of urine being 12 ounces, after the employment and failure of various drugs (diuretics and diaphoretics), as a result of rectal irrigation alone, in the space of four days, the urine increased to 40 ounces a day, and in two weeks it rose to 70 ounces in the 24 hours and the effusion on both sides had disappeared.

In a paper by Dr. Douglas H. Stewart, entitled "Puerperal Eclampsia, its Surgical Treatment," read before the West End Medical Society, November 1, 1902, the value of rectal irrigation, combined with repeated small venesections, was thoroughly discussed. His article was published in the *New York Medical Record.*

My own paper read at the same meeting, entitled "The Diuretic Action of Rectal Irrigation, the Specific Action of Normal Saline Solution in the Production of Diuresis," embraced a discussion of this important feature in Dr. Stewart's paper. My article was published in *The Medical News*, January 3, 1903.

In a paper on "Uremia," read before the Society of the Greater New York, at the Academy of Medicine, Dr. William H. Thomson called attention to the fact that in chronic nephritis with polyuria, when there is a sudden development of oliguria, rectal irrigation as a diuretic is one of our most valuable adjuncts. He furthermore advocates its employment in scarlatinal nephritis. As a matter of interest, I would refer to a paper of my own, read before the New York Academy of Medicine, April 3, 1900, entitled "The Treatment of Scarlatinal Nephritis," and published in *Pediatrics*, in a series of articles in the October and November issues in 1900.

I can report many cases of benefit derived from rectal and colon irrigation in uremia, suppression of urine, acute congestion of the kidneys, and in oliguria, also in various dropsical conditions resulting from the latter; the value of the method to further elimination in various toxemias and sepsis is also self-evident. If a more frequent trial of this method results from these remarks, I shall feel I am well repaid.

IODIN, AND SOME OF ITS USES IN SURGICAL WORK.[1]

BY
JOHN EGERTON CANNADAY, M D.
Surgeon-in-Charge Sheltering Arms Hospital, Hansford, W. Va.

Iodin is an exceedingly active substance chemically, and belongs to the halogen group. It possesses great affinities for many substances, and its exact use and sphere of action in the body are unknown. Iodin was discovered by Courtois in the ashes of seaweeds in 1812. It occurs in certain mineral springs with chlorin and bromin. It enters largely into the composition of sea food and animals subsisting on this food contain their share of this evanescent substance. Galliard found by animal experimentation that it could be absorbed by the skin quite readily and that this absorbed iodin has a tendency to accumulate in the brain and lymphatic glands. It makes the circuit of the body circulation in a short time, and is eliminated in the saliva, urine, and feces.

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[1] Read by title before the Tri-State Medical Association of the Carolinas and Virginia, February 28, 1906.

Senn in his recent trip among the Esquimaux noted that iodin is liberally incorporated in the food of these people. He observed the remarkable absence of tumors of all sorts, the exceedingly benign course of syphilis, the absence of enlarged tonsils, lymphatic glands, and goiter. He attributes this immunity to their use of iodized food. Many of the leaders in scientific thought have long held that this drug is one of the most useful contained in the Pharmacopeia.

Sternberg, Senn, Koch, Schill, Fisher, Behring, Tavel, and more recently Kinnaman, have emphasized the value of iodin as an antiseptic. It is certainly the most powerful as well as the least harmful germicide we possess. In proper dilution it does not damage tissue but promotes phagocytosis and granulation. The general consensus of opinion of a large number of authorities is that iodin is of exceptional antiseptic value, being more effective in that respect than any of its compounds with the possible exception of some of its combinations with mercury; that iodoform is only of value by virtue of iodin being freed on coming in contact with the tissues. The weight of evidence easily proves that iodin and its congeners under proper conditions exert a well marked bactericidal effect on pathogenic germs. Beside being much more powerful it is far less toxic than mercuric chlorid or carbolic acid.

Kinnaman has performed an unusually elaborate and careful series of experiments with a view to the determination of the actual antiseptic value of the drug. He made use of a solution containing iodin 2.5 gm., sodium iodid 5.5 gms., sterile water 250 cc., making a 1–100 solution. A 1–1,000 solution of mercuric chlorid acting on a culture of *Streptococcus pyogenes* for 15 minutes showed a good deal of inhibitory power for the first day but allowed a good growth of streptococci to appear. An exposure of 30 minutes, however, gave no growth. The superiority of iodin is readily evidenced by the fact that a comparatively weak solution (0.2 percent) killed the streptococcus, after two minutes' exposure. To iodin the staphylococcus is far more resistant than is the streptococcus. While it takes a 1–100 solution five minutes to kill the former, a 1–500 solution is fatal to the latter in two minutes. Dr. Kinnaman's conclusions are that, in a solution of iodin varying from 0.2 to ⅛ percent, we have a germicidal agent of marked potency. Its bactericidal power is far superior to mercuric chlorid, the acknowledged leader of all other antiseptics.

A 0.5 percent solution is amply strong enough for all practical purposes. According to Reidel a 0.3 percent solution of iodin trichlorid in water destroys bacteria in a short time.

Florsheim highly commends the painting of the inflamed area in acute amygdalitis with the undiluted tincture; when marked improvement has resulted in 24 hours it is not renewed, when little or no change has taken place a second or third application may be necessary.

The tincture has been used as an injection in the treatment of anthrax with some success. In the treatment of actinomycosis and blastomycosis the administration of the drug by cataphoresis makes it much more effective. It is also administered hypodermically and internally in these conditions.

Iodin was a valued remedy in the treatment of tuberculous conditions long before the tubercle bacillus was discovered. It has been used as an injection in and around tuberculous joints; a solution has also been used much after the manner of using iodoform, leaving one or two drams of a one-half of one percent solution behind.

Von Bruns introduced iodoform to the world as a remedy in tuberculous arthritis. Since then it has enjoyed a wide range of popular favor. Senn states that the injection of iodoform glycerin emulsion into a tuberculous joint is, if efficient, usually followed by a prompt response in the way of a rise of temperature, also by swelling of the joint. This is the usual response to the presence of an antibacillary substance in contact with the synovial membrane. He considers this emulsion of the greatest value in such conditions. He uses it also in periarticular abscesses. He cautions against the danger of allowing the tuberculous process to become the seat of a mixed infection. He says that as soon as the pus microbe invades the cavity the therapeutic action of the iodoform is lost. In deeply seated cold abscesses in individuals of lowered resistance, injections of iodoform emulsion or of iodin are of most value. These patients are often unable to bear radical surgical procedures. The iodoform may be used suspended in glycerin or oil, or in an ethereal solution. The oil or the glycerin should be sterilized by boiling and the iodoform by submersion in 1–1,000 mercuric chlorid for four days. The drug is used in strengths of from 5 to 20 percent and the amount allowed to remain in the cavity varies from 4 cc. (1 dram) to 60 cc. (2 oz.).

On one occasion I had a patient who had several tuberculous abscesses in the muscles of the chest and back in addition to many signs of lung involvement. I evacuated these abscesses through small incisions made with a sharped pointed bistoury, injected a sterile ten percent emulsion of iodoform in olive oil and closed the small openings by suture. The abscesses were left undisturbed for two or three weeks and the iodoformization was then resumed. This treatment in conjunction with appropriate dietetic, hygienic, and medicinal measures produced a marked improvement, the sweats, fever, and cough disappeared, the patient increased markedly in weight and in the course of three months was apparently well.

In the treatment of goiter Hunter McGuire, of Virginia, used iodin by cataphoresis with much success. Roy has found that much good may be derived from the internal use of any preparation of iodin with thyroid or thymus gland extract in goiter. He uses the biniodid of mercury ointment externally and injects tincture of iodin into the substance of the goiter, 1.25 to 2 cc. (20 or 30 minims) at a time, at intervals of four or five days.

The iodin treatment of puerperal sepsis was first proposed by Alloway in 1883. He advocated the introduction within the uterus of suppositories containing from .65 to 1.3 gm. of iodoform night and morning. His "idea being to replace the frequent and often unsatisfactory intrauterine injection of antiseptic fluids." He reports three successful cases. Boardman, in 1884, reported a successful case in which he employed iodoform insufflation within the uterus. To the late Dr. Pryor, of New York, belongs the honor of having placed this method on a scientific basis which is, I believe, unassailable from a deductive as well as a resultant point of view.

He curetted and irrigated the uterus, then packed its cavity with ten percent iodoform gauze, the culdesac of Douglas was opened and five percent gauze was packed around the uterus, at the end of a week this was removed and replaced by fresh gauze. The packing was removed from the uterus in three days and was not as a rule replaced. The iodin reaction in the urine was demonstrable in from three to five hours. Pryor reported 37 cases in which this method of treatment was adopted. In 27, the patients had not been operated on previously and but one died; ten had had curetment done before coming under his observation and three of these died. He states that in most cases, infection spreads by way of the lymphatics and says "that method of treatment which secures sterilization of the original wound and accomplishes the absorption by the infected lymphatics of a potent yet harmless antiseptic, if at the same time accompanied by such treatment as will promote the eliminative function, will succeed best." It is well to state here that the affinity of the protoplasm of the leukocyte for iodin has been thoroughly demonstrated by Goldberg, Weiss, and many others. It increases leukocytosis, promotes vascularity and stimulates granulations.

The filling of cavities in bone due to operation or disease with the iodoform wax filling of von Mosetig-Moorhof has been productive of the happiest results. He uses finely powdered iodoform, 60 parts, spermaceti and oil of sesamum, of each 20 parts.

This mixture is fluid at 132° F. The cavity to be filled must be thoroughly clean and dry, every part of the cavity should be permeated by the mass; drainage is not usually necessary but if thought advisable can be accomplished by the insertion of narrow strips of rubber tissue. This filling is for temporary use only and is either pushed out by the growth of new tissue, or if the wound heals by first intention it is absorbed in time. The filling is well borne by the tissues, the pulse and temperature sometimes increase, but usually for only two or three days. Toxic symptoms are rare. This method gives its best results in cases of chronic circumscribed osteomyelitis, tuberculous osteomyelitis and the acute form attended by necrosis.

Langenbeck used iodin trichlorid in the treatment of tuberculous cystitis.

Numerous surgeons have found iodin of great value in the various inflammatory diseases of bones, joints, and serous cavities. Perhaps no drug has such universal use in any one condition as has iodin and its compounds in the treatment of syphilis. Rather recently iodipin, a solution of iodin in oil of sesame was introduced by Winternitz for hypodermic and internal use in tertiary syphilis.

Aumond and Bonnaire use the following formula for an irrigating solution; iodin 3 gm.; potassium iodid 6 gm.; water 1,000 gm. They make use of the pure tincture as a local application prior to curetment as a means of partially sterilizing the inside of the uterus. Many of the old-time gynecologists were in the habit of making an application of the plain tincture to the inside of the uterus after curetment.

Iodin in weak solution as an irrigation is of much value in the treatment of suppurative conditions as suppurative arthritis, abscess, empyema, etc. I have several times used a one percent solution in the treatment of suppurating sinuses and wounds with the result that there was a prompt disappearance of pus and an abundant formation of healthy granulation tissue.

As an irrigating solution 1–1,000 is a suitable strength.

After operative work about the genitals and other parts where a dressing cannot be well kept clean, I have often used an ointment containing sterile iodoform and petrolatum as a protective, with the result that primary union was secured. Surgeons as a rule place much confidence in iodoform gauze as a protective packing in operations in the mouth, rectum, or vagina.

Gross and Lobit believed tincture of iodin to be a specific in the treatment of facial erysipelas. It is now considerably used in this and other forms of superficial lymphangitis as a local application in strengths of from one-fourth of one percent to one percent according to the susceptibility of the skin.

This drug will be found to be a most excellent disinfectant and deodorant to mitigate the offensiveness of the discharge from a broken-down cancer or other neoplasm.

Kidney insufficiency predisposes to iodism, which is no doubt due to the local action of the drug at some of the more sensitive points of elimination.

It must not be forgotten that, although iodin is the most harmless of antiseptics it and its compound iodoform are active agents and as such should be used with caution. They are under certain circumstances powerfully toxic. It is after injection into serous cavities that the most serious results are seen. The pyogenic membrane lining the tuberculous or pus cavity seems to possess the power of immunity to a marked degree. The old and enfeebled patient will be much more susceptible to the poisonous action than the more robust. It is a wellknown fact that an individual suffering from septic infection will tolerate much more iodin without the symptoms of poisoning than one under normal conditions. Rarely there are found persons having so marked an idiosyncrasy for iodoform that it will act as a poison when exhibited in the usual manner in small amounts. H. McN. Jones reports the case of a woman who, after abdominal section, had a pad of iodoform gauze placed over the wound. The third day irritation and smarting were noticed. The following day the gauze was removed, the irritation having increased, vesicles appeared on the hands, arms, and legs without constitutional symptoms. Personally I have seen two cases of local dermatitis due to the use of iodoform gauze. One was in an old anemic man and in the other, the patient had had the skin of the affected region previously irritated by a solution of carbolic acid. We should not, however, lose sight of the fact that patients have idiosyncrasies for other drugs beside iodoform. I have seen on several occasions a severe dermatitis set up by the local application of the usual solutions of mercuric chlorid.

Roux first made use of tincture of iodin in hand disinfection, using it for the finger-tips to penetrate the subungual spaces and the nail folds. Von Mikulicz used it in the same way and Senn uses it for that purpose, introducing it around these crevices with a nail brush. For several months past I have used a one-half of one percent alcoholic solution for purposes of hand disinfection preliminary to operative work in all cases in which rubber gloves were not worn. The same solution is made use of in the preparation of the site of the operation incision. I wear rubber gloves as a routine measure in operative work but in a certain number of these cases gloves are undesirable, again in an occasional septic case, a glove may be punctured or torn and the operator feels the need of some reliable antiseptic for his own sake as well as for the protection of his future patients. The use of this solution simplifies the technic and saves time. The method I practise is as follows: First thorough scrubbing with nail brush, green soap, and running hot water, going over the hands in a systematic and methodic manner, taking each part in its turn, and always following the same order so as to skip no part. I pay particular attention to the nail folds, subungual spaces, and the skin between the fingers. Short clipped nails should be cleaned with a good heavy metal nail file, the hands scrubbed again, washing off the soap in running hot water. Remove the residue of the soap with 70 percent solution of alcohol, immerse in iodin solution for five minutes, rinse in sterile water. The light brown stain can be removed by washing in dilute ammonia water after operations, or if left alone it will soon disappear.

The results clinically of this method have been superb. In a long series of cases no infection attributable to the hands has occurred.

In conclusion I would say that iodin constitutes a near approach to a perfect antiseptic in that it is nontoxic in effective strength, being one-fourth as poisonous as mercuric chlorid though many times more valuable as a germicide. It does not coagulate albumin or form inert compounds with the tissues. It possesses great penetrating power, is easily prepared and is stable.

A solution of iodin is the most practicable chemical agent we have for the sterilization of the skin.

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THE DIAGNOSIS OF INCIPIENT TUBERCULOSIS.[1]

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It is upon the general practitioner that the brunt of the fight against tuberculosis must fall. Most patients come first to him for consultation; and oftentimes when they may be cured, if the disease is recognized. Every family physician should, in addition to his other work, be a specialist in tuberculosis, for it is by far the most frequent disease he has to deal with. Regarding few others, will intelligent and timely action bear so much good fruit and so much profitable gratitude from the patient and the patient's friends. In no other circumstance of practice will the mournful results of erroneous diagnosis and conscienceless neglect be visited so disastrously upon him. The family physician must be very skilled in detecting incipient tuberculosis, so that no valuable time may be lost; indeed, there is in the whole realm of medicine no subject so imperatively demanding proficiency.

The definition of incipient tuberculosis as set forth by the Committee on Nomenclature of the National Association for the Study and Prevention of Tuberculosis is as follows: "Slight initial lesion in the form of infiltration limited to the apex or small part of one lobe. No tuberculous complications. Slight or no constitutional symptoms (particularly including gastric or intestinal disturbances or rapid loss of weight). Slight or no elevation of temperature or acceleration of pulse at any time during 24 hours, especially after rest. Expectoration usually small in amount or absent. Tubercle bacilli may be present or absent."

This definition differs very markedly, I think, from the conception of incipient tuberculosis which is pretty generally held; how great is the difference, is a topic upon which the medical superintendent of any sanatorium in the land could discourse most eloquently.

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[1] Read before the Society of the Medical Inspectors of the City of New York, April 3, 1906.

I shall now enter at once upon a plain, blunt statement of signs which may be met in the beginning of tuberculosis. I shall not touch upon the familiar picture of the disease in its pronounced form; nor shall I crowd my paper with pathologic and other collateral data, however valuable, such as are to be found in the literature.

The history-taking must be begun with the ancestry of the patient. Heredity is a very decided factor. The disease itself is rarely transmitted; but tuberculous parents can and often do transmit a tissue soil congenial for the growth and propagation of the Koch bacillus and its allied microorganisms.

The family history must be taken; there may have been scrofula among brothers and sisters; or relatives may have died of tuberculosis.

The patient's previous history must be studied, from birth. Has he at any time contracted an exhausting disease, such as pertussis, or measles, grip, malaria, pneumonia, or especially pleurisy? What is his age? Tuberculosis prevails most between the fifteenth and the forty-fifth years. Has he been suffering from a neglected cold? What have been his mode of life and his habits, especially with regard to alcohol and tobacco? Has he been dissolute to an enervating degree? What has been his environment; has he been in want, or starving, or in grievous mental distress; have his rooms been unsanitary? Has his occupation (such as a dust-producing or a confining trade) predisposed him to tuberculosis?

A systematic examination of all the organs and functions must follow, as in general medicine; every physician is familiar with such details. The lungs will receive particular attention because most cases of tuberculosis are first manifest in these organs. But a primary tuberculous focus may be present in any part of the body; and should be discovered if possible. Often the pulmonary affection is secondary to such a lesion, which may be found in the upper air passages, the alimentary tract and the organs related to it, the genito-urinary apparatus, the bones, the joints, or in fact any tissue in the economy. Hoarseness, habitual nose-bleed, hypertrophied tonsils' adenoids, a swollen thyroid, or enlarged glands in the neck may be suggestive. Fistulas and ischiorectal abscesses are often tuberculous.

Digestion is early impaired. Hyperchlorhydria, anorexia, eructations, epigastric distention and distress after meals, alternating constipation and diarrhea—if these symptoms have defied treatment tuberculosis must be sought, especially if there be also loss of weight and strength, unwonted fatigue and dyspnea on exertion.

The nervous system may be disordered. "Lack of ambition," "not quite up to par,' ' no energy," "run down"—such phrases as these may mislead the physician into an erroneous diagnosis of neurasthenia. Soon such aberrations assume the unmistakable psychism of the tuberculous—irritability, loss of will-power and of self-restraint, weakmindedness, and profound depression changing upon the moment to unreasonable optimism.

There may be a cough—very slight to begin with, manifest only on rising, perhaps denied or not easily recalled. Usually it is the dry cough of the German proverb (Trockner Husten, toder Trumpeter)—harsh, paroxysmal, with not enough expectoration for examination. Or small masses of clear mucus may appear, which later become foamy, viscid, glairy, and dotted with minute firm granules and finally with yellow spots.

Pain really due to tuberculosis may give an erroneous impression, as of a neuralgia, or a peripheral neuritis, an arthritis or a rheumatism, an abdominal lesion a myelitis or a progressive muscular atrophy. There may be a vague sense of discomfort in the thorax; or pain, especially in the apices, may be elicited on deep breathing. Pain in the interscapular space would suggest a tuberculous process in the trachea, the thoracic duct or the bronchial glands.

The temperature should be taken (carefully observing the technic of temperature taking) by the mouth, during rest, every four hours, or better still, every two hours, for several days. There is a normal range of half a degree above or below the index during the 24 hours; there would be a temporary rise after exercise or after meals, while in the tuberculous such a rise would persist. The consumption temperature is generally above the normal, especially toward night; it may be subnormal in the morning. A persistent rise of one degree should make one suspicious. The fever may be accompanied by malaise, flushing, and a sensation of warmth or chills such as may be attributed to malaria.

Profuse perspiration, especially at night, is very pathognomonic; like most of the general symptoms of the disease this sweating is due to the dissemination throughout the organism, by means of the lymph and blood channels, of the poisons generated in the tuberculous process.

In women frequent parturitions resulting in physiologic poverty, prolonged lactation, sinking spells, and inanition are predisposing factors. The fever of tuberculosis is high during the menses, although in many women a slight rise is normal at this period. The flow may be absent, a condition generally obtaining, however, only in advanced tuberculosis.

Bodington and Brehmer held the small heart (embryocardia) to be pathognomonic; and most subsequent observers have agreed with them. Such a heart, however, is very difficult to diagnosis; some declare this can be done only on autopsy. The apex heart—a feeble one—would approach a centimeter nearer the midsternum than the normal; and the beating of the undersized heart has been observed by means of the fluoroscope. The congenitally small organ is accompanied by an aorta and vessels correspondingly small; and the nutrition of the whole economy suffers accordingly. In addition to the size, other cardiac defects may suggest tuberculosis. There may be congenital stenosis of the pulmonary orifice; this is, however, seldom seen in adults, for the reason that such sufferers do not live much beyond childhood. The pulmonary second sound may be reduplicated or accentuated. There may be a mitral lesion, such as would result in deficient tissue-oxygenation, a condition inviting germ implantation. It is held, however, that the pulmonary blood stasis consequent upon valvular lesions is inimical to the growth of tubercle bacillus.

A persistently rapid, small, weak, low pressure pulse, above 100, having its note unmodified by position, and which is not associated with any other well-defined disease, indicates, tuberculosis; this pulse is due largely to the infective process. A hemoptysis strongly indicates tuberculosis; the disease is generally past its incipiency when this occurs. We must, however, exclude hemorrhage due to nose-bleed, to ruptured vessels in the upper air passages, to easily bleeding gums, gastric ulcer, splenomegaly, aneurysm, or to pulmonary infarcts occurring with mitral stenosis.

Examination of the blood itself has not produced anything especially pathognomonic of tuberculosis; however, other diseases in which the blood findings are characteristic have been excluded by this means. Anemia and chlorosis are predisposing affections.

In the physical examination of the lungs, as elsewhere, no detail must escape detection. We suspect usually a lesion at the right apex, and the observations which follow apply to this region; but there may be tuberculous foci at the base of a lung, or in the axillary region, or indeed in any part. The two sides and corresponding areas must be compared, during the same stages of the respiratory act, using the blue pencil to indicate suspected lesions. The patient should assume the erect posture, be stripped to the waist; and all the muscles concerned in respiration should be relaxed. Women may be seated upon a revolving stool.

On *inspection* the condition of the skin must be noted—whether it be thin, pale and transparent, with the superficial veins prominent; or oily, or pasty, or unduly dry and hot, or moist and hot, or erythematous; whether there be an objectionable odor; whether the features be drawn and cyanotic, as in mouth breathers. The extremities may be cold and clammy. The patient may appear quite well nourished; on the other hand the relation of height to weight (normally 25 for males and 23 for females) is likely to be low.* Mydriasis; the hectic flush; the hair dry and lusterless, split at ends and easily falling out; the clubbed finger-tips and incurvated nails; unduly reddened margins of the gums—these symptoms, though characteristic of postincipient conditions, may be present. Scarring, especially about the neck, may denote scrofula or tuberculosis healed in childhood; lymphadenomas may be of a tuberculous nature. The shape of the tuberculous chest has been variously described as round, flat, long, narrow, shallow, deep, large, and small; Bessesson[1] has probably correctly characterized it as "narrow, tending to the rounded form, with a relative elongation." Egan[2] computes the thoracic perimeter as the circumference of the chest during forced inspiration added to that at forced expiration. The result, divided by two, should normally be not less than one-half the patient's height.

Dilatation, contraction, or local depression in the chest wall must be sought. The clavicles may be unduly prominent, with corresponding contraction beneath them; this condition will become progressively marked with the development of the lesion at the apex. The acromion may be higher than the sternal end of the clavicle; there may be winged scapulas and spinal irregularities, especially in the young. The intercostal spaces and angles are likely to become accentuated and to emphasize the general emaciation. The romantic type of those predisposed to tuberculosis—the long neck, stooping shoulders, pallid skin, and thin, tapering fingers—may be in evidence.

There may be inequality of chest expansion, respiration may be frequent, quite shallow and obviously insufficient; expiration may be unduly prolonged; the breathing may be retarded, or irregular over affected areas, especially the apices; the respiratory movements may be painful. Litten's shadow may show restricted diaphragmatic excursions due to pain or to pleuritic adhesions. In females the typical superior costal respiration is modified early in tuberculosis, so that it comes to resemble the masculine abdominal type.

Palpation may detect inequalities of chest expansion not found on inspection. Vocal fremitus will be increased over an affected area. Pleural fremitus may be evident over dry pleurisies, especially in the axillas. Bronchial fremitus is a valuable sign, often evidencing tuberculous bronchial glands, a condition often preceding tuberculosis of the lung parenchyma.

Percussion will not elicit dulness in incipient tuberculosis; the disease is pronounced when dulness appears, as a consideration of the pathology of tubercle formation in the lung will demonstrate. With a light but firm stroke, the finger upon the chest being made, as it were, a part of the patient's body, a note characterized as vesiculotympanitic or semitympanitic, with heightened resonance, may be elicited. There may be compensatory emphysema in parts surrounding the area involved in tubercle formation.

Auscultation of breathing is very important. Respiration may be retarded or restricted over the affected area; and to a lesser degree also over the unaffected side. Here one may corroborate or emphasize observations made on inspection. One should study in detail inspiration and expiration; the former is likely to give signs concerning the alveoli, the latter concerning the bronchi and its ramifications. Expiration, normally prolonged in the relation of 6 to 7, is likely to be still further prolonged; and its pitch may be elevated. The intensity may be diminished over a contracted area;

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*TABLE OF HEIGHT, WEIGHT, AND CHEST MEASUREMENTS IN THE NORMAL.

Height.	Chest.	Standard Weight.	Twenty percent under weight.	Forty-five percent over weight.
	Inches.	Pounds.	Pounds.	Pounds.
5 feet.	33½	115	92	167
5 " 1 inch.	34	120	96	174
5 " 2 inches.	35	125	100	181½
5 " 3 "	36	130	104	188½
5 " 4 "	36½	135	108	195
5 " 5 "	37	140	112	203
5 " 6 "	37½	143	114	207
5 " 7 "	38	145	116	210
5 " 8 "	38½	148	119⅓	215
5 " 9 "	39	155	124	224⅓
5 " 10 "	39½	160	128	232
5 " 11 "	40½	165	132	239
6 " 0 "	41	170	136	246
6 " 1 "	41½	175	140	254

but upon deep respirations it may be increased. The rhythm may be interrupted, suggesting coarse changes; or there may be a rapidly succeeding series of short puffs, especially during inspiration, indicating a number of small and isolated tuberculous foci. There may be cogwheel respiration, due to impaired vesicular elasticity and perhaps also to weakening of the external respiratory muscles. The quality of the breathing may be rude or rough; this may be the earliest sign of pulmonary tuberculosis, and is due to slight inflammatory changes in the bronchioli, the air traversing uneven surfaces and slightly narrowed lumina.[3] As the case develops beyond incipiency the breathing will become bronchial or tubular; but by this time marked consolidation will have supervened.

Auscultation of voice and whisper will show the intensity of vocal resonance to be increased and the pitch to be raised at the site of the tuberculous process; this sign may be emphasized by coughing.

There may be no rales whatever, or they may be found at one examination and lost at another. They may be present on damp days or in the early morning, and absent on dry days. Coughing may elicit them. Potassium iodid may bring them out. There may be a few crackling or squeaking rales over an area of altered resonance, especially during or at the end of inspiration. Or there may be fine bronchial clicks which will disappear on coughing or deep breathing; these are characteristic of a localized bronchitis. Pleuritic friction sounds, atelectasis and evidences of small exudates at the posterior bases must be differentiated.

One may get no pulmonary signs at all, for the simple reason that the initial tuberculous process may not be in the lungs.

The sputum, if there is any, must be repeatedly examined for the Koch bacillus; it may be centrifuged for this purpose. But the examinations may be negative, as we will easily comprehend from a consideration of the pathology of incipient tuberculosis. There may be quite considerable tubercle formation before the bacillus can appear in the sputum; for tubercles must caseate and break down, voiding their bacillus-laden contents into an adjacent bronchiole or bronchus, before the expectoration will give evidence of the germ. A positive finding, of course, settles the question; but a negative finding means absolutely nothing, and should have no weight in the diagnosis. Tuberculin may have to be injected. For most cases this is not necessary; but the practitioner should not hesitate to make the test, if the diagnosis cannot otherwise be established. The Health Department furnishes tuberculin, with very precise information concerning its use.

The iodids[4] are of value in developing vague or latent physical signs; the potash salt may be given for several days in doses of 0.2 (3 gr.), three times a day. The röntgen-ray apparatus may be useful in locating a lesion, especially if it be central. Moreover, fluoroscopy is valuable in determining defective lung expansion. But most general practitioners cannot avail themselves of this means; and they will rarely find a case in which it will be requisite. The machinery is expensive, and only the skilled expert can utilize it.

Such diagnostic means as the serum test and the inoculation of sputum into guineapigs are neither generally available nor necessary.

Among the diseases with which tuberculosis is oftentimes confounded are syphilis, grip, malaria, bronchitis, pleurisy, pneumonia, typhoid, osteomyelitis, and streptococcus infections.

Obviously, to reach a diagnosis of incipient tuberculosis is no easy matter. Apart from the data collected to this end, three traits are essential in the examining physician—the discriminative faculty, judgment, and intuition. One must collect, by careful note—taking all the ascertainable facts in a given case; else no reliable scientific deduction is possible. The physician must survey broadly the whole case history and must be able to discriminate between essential points and such as have no bearing upon the question. Then he must reach conclusions from a judgment of many factors; one among those might be irrelevant;

several of them taken together would be suggestive; a number of them combined would be conclusive. Intuition is supposed to be a peculiarly feminine mode of thought; but it is not to be sneered at, by any means.

Richardson,[5] in another field, has emphasized the value of insight as a help in diagnosis. One is almost able to say, he declares, that "this student will always make a successful diagnostician, and his advice will always be good; that student will never amount to much as a diagnostician." In one of his examinations at the Harvard Medical School he asked his advanced students to give the diagnosis in certain carefully described cases taken from his note books. In some of these cases there had been much difference of opinion among physicians of the largest experience; yet some of the students, interpreting the histories properly, and drawing the correct conclusions, gave invariably the right answers. Many of these successful students did not show the learning of others who generally reached wrong conclusions. "The students," declares Richardson, "whose deductions were in every case correct will without question make more successful practitioners than the students who, exhibiting much more learning, picked out the unimportant features in the histories of the cases, and on these unimportant features based correct deductions, which were, as to the real lesion, always wrong;" and he emphasizes, as requirements of the successful diagnostician "the power of grasping the essential features of a case, and of basing, on such evidences, conclusions almost invariably correct."

Finally, it may not be possible to reach a diagnosis upon the first examination. Then the patient will be told so frankly, and he must be kept under observation for perhaps a month, until a definite conclusion can be come to. Several examinations may be required. The most skilled physicians must sometimes follow this course. But the patient will certainly be disappointed. He will come, probably in great anxiety, wanting a decisive answer to the question, "have I or have I not consumption?" He will not understand why what appears to him a simple matter cannot be ascertained at once. He will not comprehend the examiner's difficulties, when called upon for a positive statement. Therefore, whenever possible, a diagnosis should be reached upon the first examination; and generally it can then be made. If the first man does not make it, another probably will.

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A PROFESSIONAL AND SUCCESSFUL LIFE WRECKED BY ILL-FITTING GLASSES.

BY

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During the last 15 years I have given almost as much attention to the many details of securing correctly fitting spectacles or eyeglasses for my patients as I have given to the correctness of the prescriptions. I am confident that by this solicitude and watchfulness I have saved a large proportion of my patients from bad health and hurt eyes. There is almost no end of the varying details required by instruction, reiteration, and warning, to keep patients from carelessness, neglect, and wrong notions as to the adjustment of correctly made lenses, which may affect the general health, lessen the power of work, general and ocular, or ruin the eyes themselves. In this observance I have been aided by the best and most conscientious expertness on the part of several local opticians. Without such good local opticians the oculist's work way be rendered almost valueless or worse than useless in many, if not the majority of cases. Even in the United States, and even in cities with supposably expert opticians, if one will observe 100 glass-wearers as they pass in the street, he must shudder to think of the injury being done by ludicrously ill-fitting glasses. This, of course, is apart from the fact that the oculist's prescriptions were correct or not correct in a scientific sense. To suppose them correct medically is, however, a vast assumption. Many socalled ophthalmologic surgeons or experts, men of great fame and reputation, scorn "cyclopegia" (as one persistently calls it) and say they cure by taking glasses off; they laugh at "a little astigmatism," "too little to correct;" they worship the inaccurate ophthalmometer; they make merry over the absurd idea of any systemic diseases due to eyestrain; and they roar at the eyestrain hobby-rider. The chances are therefore high, that to the injury of the bad work of the optician is added the insult of the bad work of the oculist. When the optician claims both functions as his very own, then one plus one equals four in the manifolding of morbid results.

To illustrate, I describe briefly a case in which a man's calling and success in life were ruined, simply and solely by a pair of badly-fitting eyeglasses, the lenses themselves correctly ordered by one whom I hold to be a conscientious refractionist.

About ten years ago Mr. A. H., a young lawyer, consulted me, his only complaint being frontal headache. He was a healthy man in every other way, of an excellent family, just starting in professional life. Under cycloplegia, I found the following error of refraction:

R. + S. 6.50 + Cyl. 1.37 ax. 100° = 20/30.
L. + S. 6.50 + Cyl. 1.00 ax. 90° = 20/50.

I ordered spectacles to be made by a good optical firm which does not "examine eyes free" and which follows the oculist's orders absolutely. One diopter spherical was deducted for constant use. He was duly and repeatedly warned as to the harm already done even the better eye, and that the worse eye would hardly recover its lost acuteness, at least without great watchfulness and frequent advice. The future danger was thoroughly impressed upon his mind, and he was ordered to return often for awhile, and never less often than every two years. He was also requested to return to the optician every month to be sure that his frames should always be correctly adjusted. He had immediate relief from headache, and had such increased power of study, reading, and writing, that he forgot or neglected all my warnings, and did not return to my office for nine and a half years. He had grown deeply interested in his professional work, and had for a number of years taken up legal editorial and literary labor, working nearly all day at close range, and frequently evenings also. He had not a symptom to complain of except that his eyes tired considerably under the long-continued near use. According to the old law, high defects ruin the eyes themselves, and there are no reflexes to the general system. Again, the accommodation having been paralyzed, I retested the refraction and found that it had changed only very slightly during these years of neglect and overuse—a rare finding, but one that may sometimes occur. I was shocked to find that the visual acuteness in the right eye had decreased considerably, while the left had gone out of use, 10-200 being the measure of the remnants of retinal sensibility. I found a chronic hopeless central choroiditis of the right eye in progress, and in the left a diffused choroidoretinitis equally beyond all therapeutic influence. His health had been and then was perfect. The most persistent search revealed no cause of the tragedy outside of the eye itself. In all these years he had not a symptom, general, cerebral, or ocular, which had attracted any attention. When I asked him for his glasses and he put them on, all was plain! They were eyeglasses, and nearly the most outrageously ill-fitting things I had ever seen. Soon after he had consulted me nine or ten years ago, he had disregarded all I had said, and had gone to a second optician, who, without a prescription, had neutralized his old lenses, and made him a pair of eyeglasses. They must have produced many degrees of heterophoria of several kinds, and they surely misplaced his axes of astigmatism by 15 or 20. I told him that his eyes and professional life were ruined, that he would have to quit his profession for one requiring no reading or writing and that I would not take him back as a patient unless he would solemnly promise to obey every instruction I should give him in the future.

This history teaches:

1. That "the old ophthalmology" would have accepted the destroyed maculas and ruined visual acuteness as a fact standing alone, without cause, a case of choroidoretinitis *per se*, needing no explanation and to be filed away in the box, the coffin, of dead diseases, about which no more pother! The old ophthalmology would not dream of finding out the functional disease which produced the organic disease. That eyestrain could have anything to do with the matter —"Pshaw! Hath not Dr. Knapp, and Dr. Howe, and Dr. Roosa, and Dr. Dana, and Dr. Fisher, publicly, and a hundred others privately, laughed such nonsense out of the minds of all sensible men?"

2. This patient was wearing correctly ground glasses, prescribed by a good oculist. What more could an "exaggerator" a "hobby-rider," and an "eyestrain faddist" ask? This only: His eyeglasses should be so placed that their axes of astigmatism should not be wrong by 15 or 20.

3. That the optical firm which, even at his request, gave this patient eyeglasses without a prescription, and without notifying the oculist, should be compelled to give 50 percent or more of its net profits to the patient during his life.

4. That the case of the opticians generally must be taken in hand not only by the oculists, but by the profession as a whole; for it is only by so doing that medical men can be incited to do the accurate prescribing required to cure the hundred kinds of life-wrecking ocular neuroses which today, uncured, are turning the lives of millions into needless tragedies; and only by checking the mad ambitions of opticians to become physicians without the degree of M. D., can we secure the correct and conscientious optician work required to relieve our patients.

TWO CASES OF VAGINAL CESAREAN SECTION FOR ECLAMPSIA WITH RECOVERY.[1]

BY

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The obscurity of the etiology of puerperal eclampsia and the indefinite state of the knowledge of its pathology likewise, confront the physician with one of the most perplexing, yet intensely interesting problems with which he has to deal.

While the consensus of opinion at the present day attributes its existence to a toxemia of either maternal, fetal or combined origin, just when, where, and how it is brought about is not known. It is quite possible that there are different kinds of intoxication of pregnancy, as there are varieties of puerperal infection (Hubert). The degree of intoxication can only be determined approximately by a careful study of the symptoms so common in the disease. Albuminuria, edema, insomnia, amaurosis, dyspnea, deficient excretion of urea, headache, and epigastric pain are the cardinal danger signals of impending or actual eclampsia, and the persistence of several of these, despite active measures, is a valuable index of the gravity of the disease, and one which calls for the termination of the pregnancy or labor. The lives of the mother and child are not only menaced directly by the convulsions and coma, but also indirectly by the resultant organic lesions of the liver, kidneys, brain, and heart.

Quite naturally, then, there is great difference of opinion as to how these cases can be best managed; but elimination, sedation, and safe delivery are the methods of procedure to be considered. As to the first and second, there is general accord, differing only in matter of detail. Regarding the third, however, there is decided lack of unanimity. Some advocate treatment solely along medical, dietetic, and hygienic lines, contending that forcible intervention is not justifiable, while others demand that immediate delivery should invariably be undertaken in the interests of both mother and child. There is still a third group, who, while not agreeing with the conservative policy of the former, or the radical methods of the latter, as a routine measure, utilize both according to the exigencies of the case. That statistics may be given in favor of either class serves only to prove the merit of each and not necessarily its superiority.

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[1] Read before the Southern Surgical and Gynecological Association, December 12, 1905.

Essential to success is a well thought out plan of prompt, definite, but not overzealous treatment, based on the various phases of the disease, combined with a knowledge of the condition of the cervix and the changes it must undergo before labor can terminate or be terminated.

In primiparas, during labor, there is dilation from above downward, with gradual effacement; in multiparas, on the other hand, until the onset of labor, the internal os is usually closed, but the external is patulous; as labor progresses, the entire canal dilates, and there may be little or no effacement, particularly if dilation occurs before the presenting part has entered the brim. These characteristic differences should be borne in mind, as they have an important bearing upon the method of procedure.

I am also firmly convinced that the indiscriminate practice of giving anesthetics, continually or intermittently, extending over a period of some hours, and faulty technic, add to the inherent gravity of the disease, and are largely responsible for the high mortality. I formerly believed chloroform to be a sovereign remedy for eclampsia, but experience has markedly changed my views. Given at the onset of the convulsion, when there is a tendency to asphyxiation, it aggravates the difficulty by interfering with the supply of oxygen. Further, it is a cardiac depressant and as this organ has already undergone degeneration and the blood contains other toxic material, this, together with its deleterious influence on the renal function, should restrict its administration to the time when intervention is necessary. Chloroform masks the horror of the picture, but in quieting the symptoms is apt to add fuel to the flames.

When the cervix is soft and yielding, the convulsions are lessening in frequency and severity, the coma not profound, and pains regular, excellent results can be hoped for from the medical treatment by chloral, morphin, veratrum viride, etc., combined with eliminative measures. In a case of hydramnios or multiple pregnancy, puncture of the membranes will relieve the pressure, and may in conjunction with the foregoing remedies suffice. When the cervix is undilated and rigid, or the internal os not effaced, the bougie is advised by Krause, or the balloon of Champetier de Ribes, the rubber bags of Reynolds or Voorhees, may be used with good effect, provided time is not a necessary element, as in impending eclampsia, but on account of the slowness and uncertainty of their action they cannot be relied upon during the convulsions. Likewise, the manual method of Harris or the bimanual of Edgar, and the instrumental, as obtained by the dilator of Bossi, or its modification, are not applicable in these cases, unless by skilled hands, and even then there is great danger of extensive lacerations of the cervix and lower segment of the uterus, with possible hemorrhage and subsequent infection. It is in this class of cases that multiple incisions of the cervix, vaginal Cesarean section or hysterotomy and the classical Cesarean section have been advised.

Halbertsma (1878) recommended Cesarean section for eclampsia, and Hentman has reported 39 cases, with a maternal mortality of 51.3 percent, and a fetal mortality of 43.9 percent. It is certainly not more favorable than the other methods of intervention for the relief of this complication of pregnancy, and hence has met little support.

The utility of incisions of the cervix has long been recognized and practised, but attention has been more particularly directed to this operation of vaginal Cesarean section by Duhrssen, who improved the technic and broadened its indications. Multiple incisions are of value when the cervix is effaced; when it is not, they are fraught with danger, because of the likelihood of hemorrhage and extension of the incision by tearing, during extraction, on account of insufficient dilation. It is here that the operation of vaginal Cesarean section, as performed by Acconi (1895) and Duhrssen (1896) is more advantageous, because it provides ample opening of the cervix to admit of immediate extraction.

The technic may be described in the report of the two following cases:

Case I.—Mrs. S., primipara, 7 months' gestation. Referred to me by Dr. Ball. The patient was admitted to Columbia Hospital December 2, 1905, at 6:30 p.m. At 11 p.m. she had eight convulsions, coma was profound, and cervix was undilated. Upon consultation with Dr. Stone, of the hospital staff, it was decided to perform vaginal Cesarean section. The anterior lip of the cervix was seized with a pair of volsellum forceps on each side of the median line, the cervicovaginal junction of the mucous membrane was incised as in vaginal hysterectomy, the bladder was separated from the anterior aspect of the uterus by the fingers as far as the reflection of the peritoneum, a long narrow retractor was then inserted, lifting up the bladder. An incision extending through the cervix and anterior segment of the uterus about four and one-half inches was made with a pair of straight scissors, forceps were applied, and the child delivered. The placenta was expressed by Credé's method. The incision in the uterus was closed with interrupted sutures of kangaroo tendon and the mucous membrane with catgut. The vaginal portion of the cervix was not sutured, in order to permit free drainage. The patient stood the operation very well, but was in a semicomatose state all of next day, probably occasioned by the morphin which had been administered, as well as by the toxemia. She then became violent and had to be restrained by straps. Food was withheld for 24 hours, and calomel, 0.02 gm. (¼ gr.), was given every 15 minutes for three hours; nitroglycerin 1-1000 m. every four hours hypodermically, and high salt solution enemas given in like intervals. About 12 hours after the operation the kidneys acted well, the anasarca gradually disappeared, and the patient recovered completely. The child died of toxemia 30 hours after delivery.

Case II.—X., colored, primipara, 7 months' gestation. The patient was received into Columbia Hospital December 25, 1904, at 5:30 p. m. She had already had eight convulsions, and as they continued, Dr. Fry, of the visiting staff, was called in consultation at 7:30 o'clock. Vaginal Cesarean section was decided upon and performed at 9 o'clock. The patient by that time had had 16 convulsions and was in a profound state of coma. It was interesting in this case that the pulse at no time exceeded 72, contrary to the generally stated opinion that convulsions do not occur when the pulserate is this low. The patient was given 0.02 (¼ gr.) morphin sulfate, hypodermically, on admission, and one-half hour later an additional 8 mg. (⅛ gr.) was administered; marked physiologic effect followed, the respiration slowing to 12 per minute, and remaining so for several hours after the operation. The incision and procedures were the same as in the first case, delivery being effected with forceps. She was violent for some hours, and had one convulsion after the operation. She responded promptly to eliminative measures, recovering consciousness in 24 hours, and left the hospital at the end of five weeks, still with a trace of albumin in her urine. During the operation the bladder was punctured, and after delivery the rent was closed with catgut. There was leakage of urine for several days; then the wound healed and gave no further trouble. The child died of exhaustion about eight hours after delivery.

If the child is large, a posterior median incision should be made. The bleeding from the incision is usually not marked; the traction on the divided ends of the cervix tends to prevent it.

Hemorrhage, extensive lacerations, owing to incomplete dilation, infection, and rupture of the cicatrices in a subsequent labor, are the principal dangers to be apprehended in the cutting operations of the cervix, but with a clean and well-executed technic these complications should rarely occur. All the methods of obstetric intervention are of value, but each must be used only after thorough examination and study of the case has determined its fitness. An exact knowledge of the condition of the cervix is the essential prerequisite to success. If the cervix is well dilated, forceps or version should be employed, depending upon the position of the head. If it is undilated, the internal os effaced or effacing, manual or instrumental dilation or multiple incisions will probably suffice, but if the cervical canal is intact, vaginal Cesarean section is indicated. The latter fulfils all the indications of accouchement forcé, and has the additional advantage of not being restricted by the limitations of the other methods; therefore, in an elective case should give the best result. It is a most efficient operation and a worthy addition to the obstetric armamentarium.

THE PREVENTION OF POSTOPERATIVE ADHESIONS: AN EXPERIMENTAL STUDY.[1]

BY
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The control of postoperative adhesions would add greatly to the resources of the modern surgeon. Considering the number of untoward conditions, not infrequently entailing secondary operations, that accrue from what appears to be undue reparatory zeal on the part of tissues injured by the manipulations of the surgeon, it is strange that more extensive studies regarding their limitation have not been made. The mechanism of the formation of adhesions has been thoroughly investigated and a number of expedients for their prevention have been suggested by various surgeons but none has proved sufficiently meritorious to come into widespread use.

In speaking of this subject McKay[1] says: "Beside attending to bands and adhesions we must not leave large denuded surfaces uncovered; if possible we may cover these, as Senn suggests, with grafts of omentum, or brush these surfaces, as August Martin does, with sterile olive oil applied by a large sponge. Morris believes that aristol is capable of forming a protective covering; but we think that Stern's suggestion that collodion should be used is absurd."

Marvel[2] regards adrenalin in warm salt solution as of value in the prevention of peritoneal adhesions. This is particularly true when old adhesions have been separated but also applies under other circumstances. The adrenalin checks oozing from the torn vessels and in this way, by constricting them, helps prevent the formation of exudate. In acute operative cases when actual exudate is present, absorption of that material is brought about by the salt solution which also aids in keeping the surfaces of neighboring structures separated and the adrenalin again prevents exudate. Consequently he often places salt solution containing adrenalin in the peritoneal cavity after abdominal operations.

Wright[3] has employed for the arrest of hemorrhagic oozing a 15 percent to 20 percent solution of gelatin to which has been added 1 percent to 2 percent of formalin, the latter causing the gelatin to set in a short time. He used this in a case of hemophilia and also as a protective covering of denuded surfaces, especially of mucous membranes.

Beale[4] uses as a dressing for skin wounds a solution in acetone of a substance known under the trade name of velvril. The wound is painted with the solution and a sterile film of the dried material is then applied. The acetone is said to be unirritating to fresh wounds. He has not used the material to prevent adhesions but this possibility is suggested by the nature of the substance. That this use might not be practicable, however, is also intimated by the fact that the film does not appear to be absorbed.

Harris[5] obtained very good results in the prevention of adhesions after operations upon the brain by the use of silver foil. This may be placed directly upon the pia or in any other desired position. It is well tolerated by the tissues and exerts a favorable influence on healing surfaces.

Payr and Martina,[6] in reporting the results of resection of the liver by the aid of sutures passed through thin magnesium plates, state that the latter are potent in the prevention of adhesions. They ascribe this effect to the formation of a gas-containing adhesive material which entirely covers in the plates and the operation site and which does not readily unite to the surrounding tissues. The plates are said to be unirritating to the tissues and readily absorbable.

My interest in this subject was aroused by the microscopic examination of tissues obtained by Dr. Craig in his experimental studies of Cargile membrane. The results of those studies have been reported in full.[7] The untimely death of Dr. Craig prevented further combined studies but during the past summer I continued the work at leisure moments for the purpose of testing the value of several different materials. The experiments were too few in number to be deemed entirely conclusive but they brought out certain points which possess some value in regard to further investigations of this interesting subject. All the experiments here recorded, 15 in number, were performed upon dogs. For assistance in the operations and in working up the tissue, I am indebted to research students M. Meitzner and H. L. Hull.

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[1] Read before the Pathological Society, of Philadelphia, May 10, 1906.

Experiment I.—The right peroneal tendon was exposed for a length of 3 cm. Silver foil was then applied, an attempt being made to wrap the tendon with strips the width of the exposed segment. This was found impossible of accomplishment in anything like a perfect manner as the foil wrinkled and tore the instant any means was employed to insert it between the tendon and the underlying tissues, adhering at once to any of them with which it came in contact. Two layers in fairly good condition were finally placed over the outer surface of the tendon and some fragments beneath it; intact layers could not be applied. The skin was sutured over the part, apparently in contact with the foil, and ten days later the wound was examined. The skin incision had healed and beneath it was a large open space enclosing the tendon and surrounded by a capsule of newly formed and forming fibrous tissue approximately 2 mm. thick. No adhesions to the tendon were found over the area occupied by the silver foil which was scattered irregularly through the space or attached here and there to the capsule in variously sized clumps. The enclosing newly formed tissue was firmly adherent to the under surface of the cicatrix in the skin.

Microscopically there were some polynuclear leukocytes and fibrin in the wound, one point in the superficial part appearing as though slight infection were present. This, however, was no greater than often appears in operated animals in spite of the most careful aseptic technic. The new fibrous tissue enclosed small fragments of the foil, around which were very many giant cells. Most of this tissue was placed externally, only a very small amount being on the tendon, and was continuous with the scar of the skin incision.

Experiment II.—The abdomen was opened, the peritoneum denuded from a small area of the duodenum and over it two layers of silver foil were placed. These were put on separately, the first immediately splitting nearly the entire length when applied. One layer was put on an area of intact peritoneum a short distance below the denuded site. Sixteen days later the specimen was examined. The omentum was adherent to the under surface of the wound in the belly wall and also to the denuded area of intestine covered by the foil; also to the intestine at several points near this to which fragments of the foil had been displaced. The denuded area was also firmly adherent to the lower border of the liver and to the abdominal wall overlying that point. There was no evidence of peritonitis or of intestinal obstruction. Microscopically the omentum was adherent to the intestine, and in the new tissue forming the adhesions were numerous small fragments of the foil.

Experiment III.—The peroneal tendon of the right leg was isolated for a distance of 5 cm. allowing elevation to a greater distance than was possible in No. I. The tendon was then wrapped with two layers of silver foil, this being applied in much more perfect manner than before, laying fairly smooth throughout. Four days later the foil was found in bunches scattered throughout the operation site and adhesions between the tendon sheath and the surrounding tissue were present wherever the foil was lacking. Microscopically the tendon was surrounded by a layer of fibrin and leukocytes, the latter showing considerable necrosis. Within this exudate were fragments of the silver foil. At points, especially in contact with the tendon, were numerous spindle-shaped formative cells.

These three experiments appear to indicate the impracticability of silver foil as a material to prevent adhesions in the situations named. It is extremely difficult to apply around tendons and both there and in the abdomen becomes massed in small bunches which act as an irritant and apparently induce the formation of an excess of fibrous tissue. In the case of the one tendon, adhesions did not actually occur but the large space with new tissue forming around the clumps of foil was not a satisfactory termination. The indications were that the whole area would in the course of time have become fibrous. In the case of the brain, where the foil can be applied accurately to a level surface which afterward remains practically stationary, it is doubtless a valuable expedient in preventing adhesions.

EXPERIMENT IV.—The abdomen was opened and the intestinal peritoneum denuded in two areas. Over the proximal site was painted a 10 percent solution of gelatin followed by a similar solution to which had been added 2 percent of formalin. On the distal area was painted the formalin-gelatin mixture alone. In both instances the gelatin excited bleeding even after the flow of blood had been stopped by hot water. Probably because of this fact the gelatin did not set rapidly enough to become adherent to the surfaces and form a satisfactory protective covering. To determine if a greater quantity of formalin would aid in congelation of the gelatin and also what effect this irritating agent would produce upon the tissues, an excess of formalin, at least 50 percent, was added to the gelatin, and coats of this mixture applied to both areas. Bleeding was incited, the blood and gelatin together forming a coagulum on the surfaces.

Eight days later the omentum was found to be slightly adherent to the abdominal incision and also to both the denuded areas of the intestine, slightly more firmly to the proximal site. The excess of formalin had not illy affected the intestine unless a number of small, whitish dotlets on the peritoneum proximal to each denuded area were due to its action. There was no reactive inflammation around these, however, and they were very superficial and presumably unimportant. Microscopically, both areas showed essentially the same changes. The peritoneum and outer muscle layer were lacking. On the denuded surfaces was newly formed connective tissue which fastened the omentum to the intestine and sent prolongations into the inner muscle layer.

The difficulties with this method appear to be the slowness with which the gelatin acts, thus allowing bleeding to occur, and the actual excitation of hemorrhage by the solution, although this is in direct contrast with the findings of Wright. He used practically the double strength of the solution I employed and this may be of some importance. Even on the peritoneum surrounding the denuded area the material did not set and adhere as it should, to be effective in this work.

EXPERIMENT V.—The abdomen was opened and the peritoneum denuded from a small area of the intestine. Over this was painted a 4 percent solution of gutta-percha in chloroform, several coats being applied. The trial of this material was suggested by its use by Murphy[8] as a substitute for rubber gloves in protecting the hands. This material solidified very rapidly when not interfered with by blood which again proved an annoying feature in the experiment. A film of rubber was finally obtained over a thin layer of partially clotted blood. Two coats were also painted over a like area of intact peritoneum.

Four days afterward the omentum was found to be firmly adherent to all of the denuded area. The undenuded patch which had been covered by the film was hyperemic but adhesions were not present. No gross evidence of infection was visible. Microscopically the denuded tissue included at points the peritoneum only, occasionally the outer muscle layer also. Over the whole area were adhesions of the omentum consisting of granulation and very young fibrous tissues. Bordering this formative tissue over the denuded area was a zone of fibrinous exudate in which were numerous leukocytes. At points these were almost entirely polynuclear in type and in a few instances liquefaction of the fibrin had occurred, forming tiny foci of pus. These in no instances were extensive and healing was evident in the immediate vicinity. Over the undenuded area was a layer of fibrin containing very few leukocytes. No adhesions had formed. The gutta-percha was nowhere demonstrable.

EXPERIMENT VI.—The abdomen was opened and the peritoneum denuded from a small section of intestine. This bled profusely in spite of the use of hot water. Over this was painted several coats of a 4 percent solution of gutta-percha in carbon bisulphid. This rapidly solidified around the border of the wound but there was too much blood to secure a perfect result over the denuded area. Distal to this area was placed two coats of the solution on intact peritoneum. On a third area the peritoneum was lightly scraped with a knife, then rubbed briskly with gauze and finally covered with two coats of the solution.

Ten days later there was found adhesion of the omentum to the abdominal wound at one point where the intestine was also adherent by a short band. The denuded area of the intestine was entirely covered by adherent omentum. Distal to this and corresponding to the patch of intact peritoneum covered by solution, appeared to be a thin film of rubber although this could not positively be determined. The third area, that which was first rubbed by gauze, could not be demonstrated. For microscopic study only the denuded area was obtained.

To the entire extent the omentun was adherent by a thick layer of organizing tissue, this being particularly abundant. In it were many giant cells. A few fragments of the rubber could be detected but all were small and inconspicuous. The new tissue extended for some distance into the inner muscle layer of the intestine, the outer layer having been removed with the peritoneum.

Experiment VII.—The left tendo-Achillis was exposed and painted with three coats of 4 percent gutta-percha in chloroform. At the end of three days a small amount of inflammatory exudate was present but appeared to be free from the tendon except at a few points on the deeper aspect, presumably where the solution had not been so thoroughly applied. Microscopically, at a few points on one side of the tendon was a slight amount of exudate, chiefly of mononuclear cells.

Experiment VIII.—The abdomen was opened and an area of the intestine rubbed with gauze. A thin sheet of hardened celloidin (to be referred to later) was placed over it but could not be made to adhere. Its use was abandoned and the surface then painted with three coats of 4 percent gutta-percha in chloroform. After three days the abdomen was reopened. Owing to seizure of the wrong part, the wounded intestine was drawn out with considerable force before the treated area was located. The omentum did not come with it but was considerably thickened near that location and may have been adherent to the intestine. The adhesions, if any were present, must have been very slight. The rubber was rolled up in a mass at one point on the intestine. The denuded area was very hyperemic. Microscopically, a slight amount of fibrinous exudate was present over the treated area. There was no evidence of adherent omentum.

Experiment IX.—The abdomen was opened and the intestine scraped with a scalpel and then rubbed with gauze until strongly hyperemic and a slight oozing had occurred. It was then painted with three coats of 4 percent solution of gutta-percha in chloroform. Five days later the omentum was firmly adherent to the treated area and a neighboring coil of intestine was also attached to it. Microscopically there was a thick layer of new tissue binding the omentum to the intestine and also at one point the second coil of intestine was attached. At points in the exudate bordering the new tissue were tiny foci of suppuration.

Experiment X.—The abdomen was opened, the peritoneum removed from a small area of intestine and the spot covered by three layers of 4 percent gutta-percha in carbon bisulfid. Bleeding interfered with the proceeding. Forty-four days later there were found adhesions between the omentum and the scar in the abdominal wall. There was also a band-like attachment of the omentum 2 cm. in length over the denuded area of the intestine. Microscopically the rubber was not demonstrable.

Experiment XI.—The right tendo-Achillis was exposed and painted with three coats of 4 percent gutta-percha in xylol. At the end of three days there were uniform adhesions extending around the tendon, even on the side of the skin incision where the application could best be made. Around the deeper part of the structure was an excessive amount of inflammatory tissue. Under the microscope the exudate was found to be largely fibrin and polynuclear leukocytes. On the surface of the tendon there were at points evidence of early reparative efforts.

Experiment XII.—The left tendo-Achillis was exposed and covered with two coats of 4 percent gutta-percha in chloroform. At the end of five days there was found a layer of inflammatory tissue around the tendon but on the outer surface there were no adhesions. On the deeper surface where the material could not be so well applied, adhesions had formed. Microscopically, there was surrounding the tendon an exudate of fibrin and leukocytes but this was not abundant in amount. At points it showed beginning organization.

These experiments with solutions of gutta-percha in various substances indicate that either the gutta-percha or the solvent, or both, is too irritating to raw surfaces to be of value in the prevention of adhesions. They were thoroughly tested because with them a protective film is obtained more readily than by any other method employed.

Experiment XIII.—The left tendo-Achillis was exposed and wrapped with a thin sheet of hardened celloidin. This was prepared by pouring on a glass plate some moderately thick celloidin and then quickly tilting the plate, causing the celloidin to spread out in a very thin layer. When this is dry it forms a tough, almost transparent sheet. In this particular instance the film was sterilized by immersion for two hours in 1 to 500 mercuric chlorid solution. This slightly increased the hardness of the material. At the end of three days the celloidin was found to be intact. There were a few slight adhesions between it and the surrounding tissue but none between it and the tendon. The amount of exudate was not excessive. No infection was evident.

Experiment XIV.—The right tendo-Achillis was exposed and wrapped with a sheet of celloidin that had been treated a short time with formalin vapor and then placed for one hour in 1 to 100 mercuric chlorid solution. Ten days later the celloidin was found in place and apparently uninjured. No infection was evident. There was a thin layer of inflammatory tissue on the outer surface of the celloidin, adherent to the surrounding tissue, and also beneath on the surface of the tendon, but the celloidin was perfectly free from both these layers. Microscopically, there was found on the surface of the tendon a thick layer of exudate in which organization was beginning. Externally to the celloidin were fibrin and leukocytes. There were no signs of adhesions across the plate.

Experiment XV.—The right tendo-Achillis was exposed and wrapped with a sheet of celloidin that had been one-half hour in 1 to 500 mercuric chlorid solution. Forty-four days later the celloidin appeared perfectly intact. The tendon readily slipped through the cylinder formed by the film and there appeared to be no adhesions. Microscopically, there was a great deal of new fibrous tissue. The celloidin was present over most of the circumference of the tendon. At points where it overlapped or where possibly it had broken, were a few tiny bands of fibrous tissue but no actual adhesions were present. A few giant cells were in the vicinity of the celloidin fragments.

In this short series of experiments the celloidin films proved by far the most satisfactory material for use about isolated tendons. If properly prepared and rendered sterile there appears no objection to their use in such locations even if absorption does not finally occur. Before being used on human beings, however, they should be allowed to remain in animal tissues for periods much longer than were permitted in the experiments herein detailed, in order that what may be called their permanent effect be secured. Thinner films than were obtained by my crude method could doubtless be prepared. In the abdominal cavity where support by surrounding tissues to retain them in place is lacking, their use does not appear feasible. If sterilization by a method that would restore the adhesive properties of the moist celloidin and yet retain the stability of the film could be devised, their use on free surfaces would possibly be aided.

The great desideratum of materials to be effective in preventing the formation of adhesions in the peritoneum is that they be applicable in the moist state. Solid substances of any sort yet devised must needs be anchored and sutures defeat the purpose for which application of the protective is made. The ideal material must also be a hemostatic or the oozing of blood will interfere with its application. That the material should set rapidly and remain strongly adhesive while so doing is hardly necessary to state. That there will be devised a material answering these requirements cannot now be predicted; of its great desirability there can be no question.

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THE ANATOMY AND SURGERY OF MECKEL'S DIVERTICULUM.

BY
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Meckel's diverticulum occurs about once in 50 individuals. It is a vestigial remnant of the vitellin duct connecting the midgut with the yolk sac, in the first few weeks of fetal life. In most cases after the placental circulation has been established and the fetus is nourished from the mother's tissues, and not from the yolk sac, the approximation of the abdominal walls pinches off the yolk sac and the omphalomesenteric duct becomes obliterated, to the point of its entrance into the small intestine. In the exceptional case this does not occur, and this duct may continue patent from the umbilicus to the small intestine, or it may remain as a short blind tube, with the same coats and structure as the contiguous ileum. This is known as Meckel's diverticulum, and is usually two or three inches in length, though it varies somewhat in different individuals. It may communicate with the ileum at any point, varying from one to ten feet from the ileocolic junction. While it usually opens into the intestine at a point opposite the mesenteric border, this is by no means invariable, and its route of entrance may be through the mesentery itself. The diverticulum may equal in diameter that of the bowel into which it enters, or it may be contracted and elongated. It may be constricted at its mouth and dilated and oval or pear shaped above. Its extremity is usually blunt or rounded, but it may be branched or irregular in shape. From the free extremity of the diverticulum, a ligamentous band often extends to the navel, or it may be attached to the mesentery or intestine, or indeed to almost any portion of the abdominal parietes. This band is the remains of the omphalomesenteric vessels, and is of marked importance from a surgical standpoint, as it may form a ring through which a loop of intestine can pass, and become strangulated; or if it remains attached to the umbilicus, it may act as a tight rope, over which the intestine may hang and so become constricted.

While this aberrant structure presents marked interest from an anatomic standpoint, it is on account of its quite frequent pathologic conditions, leading to surgical complications, that I bring the subject to your attention. Says Miles F. Porter: "A Meckel's diverticulum is a greater menace to life than is an appendix vermiformis." Pathologic conditions of this diverticulum are found more frequently in males than in females, the proportion being as three to one.

Fistula.—The simplest and at the same time one of the less frequent surgical complications of Meckel's diverticulum, is the presence of a fistula at the umbilicus, discharging fecal matter. This may be a narrow tract leading to the intestine, or it may be a large sized canal through which, not only is there a discharge of feces, but a prolapse of the gut itself, with perhaps a hernia of contiguous coils of intestine. In some cases these fistulas heal spontaneously after persisting a greater or less time. The appropriate treatment is to open the abdomen, excise the fistula and close the opening into the bowel, as well as that at the navel.

Of five cases of patent diverticulum, collected by Porter, operation was done in four with five recoveries; treatment unknown in one case, with a fatal termination.

Hernia.—The presence of a Meckel's diverticulum is, quite frequently first discovered, during operations for the relief of hernia. It may be found accompanying its own coil of small intestine, but sometimes it forms the only contents of the hernial sac. The diverticulum is found more frequently in umbilical hernias than in any other variety, but it is likewise found in both forms of inguinal rupture, and has even been found in the scrotal form. It occurs in both congenital and acquired hernia. The addition of the diverticulum to the hernial contents certainly augments the danger, and gangrene has occurred in a number of cases, with fatal results.

Intestinal Obstruction.—"Obstruction from Meckel's diverticulum is relatively common, and probably occupies the place next to intussusception as the cause of intestinal obstruction," writes A. E. Halstead; who further states that "Meckel's diverticulum causes intestinal obstruction in six percent of all cases." It is then in this class of cases that the mischievous tendency of this appendage is most evident. The various forms of intestinal obstruction are found in connection with Meckel's diverticulum, but its most frequent action is that of a band, under or over which loops of small intestine become constricted. Of 184 cases of abdominal crises due to this structure, 101 were obstructions due to the bandlike action of the diverticulum and 83 were due to volvulus, intussusception diverticulitis and other pathologic conditions. (Porter.) Intestinal obstruction may occur from an unattached diverticulum, which is, however, rather rare; or from a diverticulum which is attached either by its extremity or by means of its terminal filament, to the abdominal wall or to some viscus. According to Halstead intestinal obstruction is produced in the following ways, when the diverticulum is free in the abdominal cavity. (1) By the diverticulum forming knots around a coil of intestine; (2) by the kinking of the gut from the traction of a distended or cystic diverticulum, which if kept up will produce necrosis at the point of flexion; (3) by a volvulus of the intestine around the diverticulum, or the diverticulum may itself become twisted and so cause obstruction; (4) chronic inflammation of the diverticulum and of the contiguous portion of the bowel with cicatricial narrowing of the gut, may be the cause of the ileus; (5) invagination of the diverticulum into the bowel.

When the diverticulum is attached to the abdominal wall or to some viscus, obstruction occurs much more readily, in the following ways: (1) By the diverticulum acting as a band and causing pressure on some part of the intestinal tract; (2), from a loop of intestine passing under an adherent diverticulum and becoming twisted on itself; (3) the attached diverticulum may become twisted on itself forming a volvulus, and closing the lumen of the gut; (4) the bowel may become strangulated over a tightly drawn diverticulum; (5) occlusion of intestine by kinking due to traction on an attached diverticulum; (6) acute inflammation of the diverticulum may cause obstruction; (7) prolapse of bowel through a patent umbilical fistula may also cause obstruction. As has already been noted the great majority of cases of intestinal obstruction from this structure, are due to its action as a band. There are no symptoms by means of which one can distinguish an obstruction from a Meckel's diverticulum from one caused by other conditions, though Oderfeld professes to have made the diagnosis prior to operation. The symptoms are those of ileus, and the presence of the diverticulum is first ascertained at the operation or the autopsy.

The mortality of obstruction from this cause is very great, and impresses us with the importance of early surgical aid in all cases of ileus, if we hope to save our patients. The treatment does not differ from that for similar conditions due to other causes, except as regards the diverticulum itself, which should be excised and not turned in, in most cases.

Perforation.—The diverticulum has the same anatomic structure as the ileum, and is liable to the same morbid conditions, hence perforations may occur from typhoid or tuberculous ulcers, or from injury, or abscess, and will require the same treatment appropriate to similar maladies of the small intestine.

Tumor Formations.—The diverticulum may become distended into a cyst, or foreign bodies may accumulate in its cavity causing a tumor formation, or it may be incorporated into a mass with the appendix or omentum and cause a palpable lump in the right side of the abdomen, which will be generally mistaken for an appendiceal swelling.

Diverticulitis.—Abdominal crises are not infrequently due to inflammation of the diverticulum, producing pain, fever, rigid belly wall and the usual symptoms of appendicitis. In quite a number of cases operations have been performed and the appendix exposed, and removed, without discovering the true seat of disease. In such cases there should be a further search of the abdominal cavity to see if there is not a diseased condition of the diverticulum or whether it is not due to the presence of a diverticulum.

Peritonitis.—Peritonitis often follows inflammation and ulceration of the diverticulum and presents the usual symptoms of this state, and requires the same treatment as for the same condition due to other causes.

Affections of the diverticulum not only give rise to symptoms attributed to appendicitis, but in some cases actually produce disease of the appendix, as in the case reported by McArthur, in which the appendix was so constricted by the diverticulum as to become gangrenous. In some cases the diverticulum is associated with the appendix in an inflammatory mass.

Case I.—*Acute peritonitis due to a gangrenous Meckel's diverticulum. Death.* M. B., white, aged 16, school boy, admitted to University Hospital on November 26, 1902. Family history unimportant, on admission his condition was grave, with pulse 120, respiration 20, temperature 99.6°, belly hard, and symptoms suggesting appendicitis and peritonitis. He was operated on at once, and pus was found floating free in the abdominal cavity, with no walling off of the intestines. The appendix was removed, but did not appear to be sufficiently diseased to explain the symptoms, and further search revealed a diverticulum in a gangrenous condition. This was removed and drainage instituted, but the boy rapidly grew worse, and died two days later.

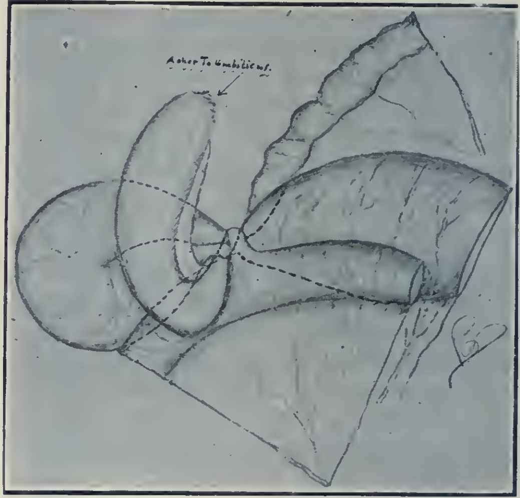
Case II.—*Lump in right side in which Meckel's diverticulum was found. Operation. Recovery.* Mrs. C., aged 26, white, married, with three children, youngest three months old, was admitted to University Hospital on April 15, 1905, and discharged, well, on May 9, 1905. On admission a somewhat painful and tender lump was present in the right iliac fossa, in the location of an appendiceal swelling. This had been first noticed shortly after her last confinement, which, however, was normal in character. When first felt the lump was about as large as a walnut, gradually increasing in size to that of a small orange. The swelling extended downward, toward the pelvis, and was somewhat movable from side to side. There was some muscular rigidity of the abdominal wall. While it was thought that the condition was due to an appendicitis surrounded by omentum, it was not definitely decided that such was the case.

Operation.—An incision through the right rectus muscle four inches in length was made, exposing the mass which appeared to be quite complicated in character. After separating the adherent omentum, a good sized pus tube was seen to form a portion of the swelling, with a large cystic ovary in close proximity. The tube and ovary were removed, when it was seen that still other structures were involved. By careful dissection a piece of bowel was detached, which at first looked as if it was a portion of the small intestine torn across, but it turned out to be a Meckel's diverticulum several inches in length, with its extremity expanded and inflamed. The diverticulum was excised and the opening into the intestine sutured. In addition to the foregoing structures, a chronically inflamed appendix, which was enlarged and indurated, formed a part of the lump. This was excised in the usual manner. In separating the adhesions some pus was encountered, making it necessary to provide drainage. The patient made a prompt recovery.

I presume that a chronic appendicitis was the first pathologic entity in this case, then by proximity a diverticulitis, and a pus tube due to infection subsequent to parturition. It is certainly uncommon for a pus tube to reach up into the iliac fossa and form a circumscribed tumor in this location. But the conjunction of all these morbid conditions is not only rare but worthy of record.

The following cases have occurred within the past few years in the hands of my colleagues at the University Hospital.

Case III.—*Intestinal obstruction from Meckel's diverticulum. Death.* I. P., boy, age 10, about seven days before coming to the hospital was taken suddenly with pain in the left lower abdomen, radiating upward, with vomiting and high temperature and rapid pulse. He was given morphin and a high enema, with some relief. On the fourth day he became worse and enemas caused no fecal evacuation, nor did morphin control the pain. He entered the University Hospital on the seventh day with a greatly distended abdomen, vomiting, temperature 104°, pulse 140, anxious expression, recti muscles rigid, and the most marked point of pain just below and to the left of the umbilicus. He was operated on at once by Dr. St Clair Spruill, the incision going through the left rectus muscle. A large amount of sanguino-purulent serum escaped on opening the peritoneum, and the intestines were covered with fibrinous exudate. The cause of the trouble was found to be an intestinal obstruction, due to a Meckel's diverticulum, which was tightly



Case III.—Strangulation by a twisted Meckel's diverticulum.

looped around a coil of small intestine. The distal end of the diverticulum was gangrenous, very much enlarged and adherent to the left margin of the umbilicus, while the proximal portion was drawn into a cord, making the mass shaped very much like a lady pear. The diverticulum was detached from the abdominal wall, the intestine released, the diverticulum excised and its opening into the gut sutured, and the abdomen drained but without avail, as the patient died within 24 hours.

Case IV.—*Intestinal adhesions and Meckel's diverticulum. Operation. Recovery.* R. M., white, aged 12, was admitted to University Hospital on May 31 and discharged on June 17, 1905. The patient complained of "pain in his stomach." Two years ago he was seized with severe pain in the right side of the abdomen, with marked tenderness on pressure, and drawing up of the right leg. He was taken to the Maryland General Hospital and operated on for appendicitis. He remained in bed three weeks and returned home at the end of five weeks with his wound healed. On May 29, 1905, he was stricken with a very severe pain in the abdomen, which increased in intensity, and was accompanied with nausea and vomiting of bile, and loose bowels. He was operated on by Dr. Frank Martin, on June 3, 1905. An incision four inches in length was made in the median line below the umbilicus, and an adhesion was found between the small intestine and the peritoneum, which was divided. A Meckel's diverticulum was found about two feet from the ileocecal valve, which was greatly distended and communicated with the intestine by a constricted orifice. The diverticulum was excised and its orifice sutured, and the patient made a prompt recovery. I think it probable that the crisis in this case was due to distention of the diverticulum with intestinal contents.

Clean Cars for Johnstown.—George Hay, of the Johnstown, Pa., Health Department, has served notice upon the trolley companies running in the town that the floor of every car, and every window must be regularly scrubbed and washed. He declares the cars have long been in an unsanitary condition, and that further carelessness will not be tolerated.

Overlying of Infants.—At a recent inquest held in London in the case of an infant suffocated while in bed with its parents, the coroner stated that about 2,000 infants annually lost their lives in this way in England, there being in the neighborhood of 600 deaths from this cause in London alone.

CLINICAL NOTES.

PERSISTENT TINNITUS AURIUM CURED BY EUSTACHIAN INFLATION WITH HEATED DRY AIR.[1]

BY
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As some of the Fellows present this evening may remember, I have on two previous occasions called the attention of this Section of the College, to the excellent results obtained in the treatment of certain cases of catarrhal headaches, deafness and tinnitus aurium by dry hot-air inflations. As considerable interest has been manifested in this subject, I have thought it worth while to bring before you the report of a case of persistent tinnitus aurium cured by this treatment.

The patient, Mrs. H. G., a strong, well-built woman, aged 38, a Russian by birth, visited my clinic at the Philadelphia Polyclinic on February 15, 1905. She complained of a very sore throat, with pain in the head and left ear, associated with a very loud buzzing and roaring in the same ear. The symptoms had existed for several days. Her previous history was that of good health, except some muscular rheumatism. She had never had any previous trouble with her throat or ears.

Examination showed an inflamed, swollen left tonsil with swelling and congestion of the left lateral and posterior pharyngeal walls. The nasal septum was slightly deflected to the right and the turbinals on both sides were swollen. The left membrana tympani was slightly congested, but otherwise normal.

Appropriate treatment was instituted and after some days the patient reported feeling well except for the otalgia and tinnitus. The tinnitus was apparently very severe, she seemed greatly distressed, saying that it interfered with sleep and caused her much confusion. She was referred to the ear department of the hospital in the early part of March, 1905. The patient visited the ear clinic with great regularity, she states she went there three times a week during the spring, twice a week during the summer, and occasionally during the autumn.

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[1] Read before the Section of Otology and Laryngology of the College of Physicians of Philadelphia, Feb. 21, 1906.

I am informed she received the most careful attention, the treatment consisting of massage to the ear drum, politerization, and also the occasional use of the eustachian catheter. In addition to this treatment six carious teeth in the upper left jaw were, by directions, extracted.

The patient returned to my clinic in the latter part of November, stating that she could get no relief from the tinnitus, that the noise in her head kept her miserable and requested to have something further done for relief. She was then placed in the hands of one of my assistants who was directed to inflate the ear by means of the eustachian catheter and heated dry air. This he did three or four times, but although the patient felt somewhat better, she was not relieved of the tinnitus. Not being satisfied with the working of the apparatus at the hospital and wishing to assure myself that the patient was thoroughly treated, I directed her to apply to my office for treatment. At her visit, using my usual covered metal eustachian catheter and hot-air apparatus I thoroughly inflated the left ear with heated dry air, using about 20 pounds pressure.

The patient did not reappear for six weeks, when she again visited my clinic for a fresh head cold, and stated that she had not had the slightest noise in her ear since the day I treated her.

Since then I have kept the patient under observation and up to the present time, she remains entirely free from otalgia and tinnitus.

It is certainly gratifying to obtain such a result in a case of eustachian and middle-ear catarrh and tinnitus, in which, for so long a time, treatment had been given by such well-trained and competent men.

Such positive results as were obtained in this case and others that have been previously reported, demonstrate the value of this treatment as a valuable additional therapeutic resource to our present methods.

Pure Drugs in Australia.—According to a synopsis of the new Australian commerce act furnished by Consul General Bray, of Melbourne, all medicines and medical preparations imported or exported must bear a description showing their exact nature and contents. Any preparation containing opium or "any ingredient having a similar effect to opium upon the human constitution" must be labeled accordingly.

A SIMPLE METHOD FOR PUTTING THE INTESTINE ON THE STRETCH TO FACILITATE END-TO-END ANASTOMOSIS.

BY
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Many mechanical devices and stitches, both complicated and simple, have been recommended for the purpose of facilitating end-to-end intestinal anastomosis. All these methods have their advantages and disadvantages. Though many of the methods seem easy when employed by the expert operator, yet the man who is called upon to do an occasional emergency operation on short notice is certainly handicapped, in that he may not understand the different methods, may not have the instruments necessary for the operation, or if he has, may not be skilful in their use.

After having met the various obstacles in several intestinal operations, I began a series of experiments upon dogs. Over 100 dogs were used, some being operated upon more than once. The method used in each case was as follows:

The only instruments required are those used in the ordinary abdominal operation with the exception of two plates or splints which may be made from metal, hard rubber, or wood. Mine were constructed for the most part from berry boxes.

If the plates are made from hard rubber or wood, care should be used to see that the corners are rounded to prevent undue pressure at any one point of the bowel, and the edge of the plate that comes in contact with the bowel should be slightly beveled. The plates are 1.1 to 1.3 inches long, by 0.4 of an inch wide, and about one-twentieth of an inch thick. Two holes, one-fourth of an inch apart, are drilled through the plate, near the beveled edge, in which is placed a silk suture forming a loop of about two inches in length.

The intestine is brought out of the abdominal wound, but before severing, an attempt is made to force the intestinal contents out of the portion of the bowel to be opened. An assistant should grasp it about five or six inches from the point where the incision is to be made to prevent the leakage of the intestinal contents into the already emptied portion of the bowel. The mesentery is now perforated between the large vessels which can readily be recognized. A strand of gauze is tied around the intestine just sufficiently firm to prevent leakage, and all exposed surfaces are protected by moist aseptic gauze or towels. It is well to sponge out the cut ends of the bowel that are to be brought together with a pledget of moist aseptic cotton.

The plates, with their flat sides placed together, are inserted into the cut end of the bowel the loops being pulled upon (Fig. 1); the stretching, however, must not exceed the physiologic limit. While in this position the plates are caught in the jaws of a long hemostatic clamp (Fig. 2), a long narrow jaw being preferred, and it should enter the bowel opposite the mestenteric attachment.

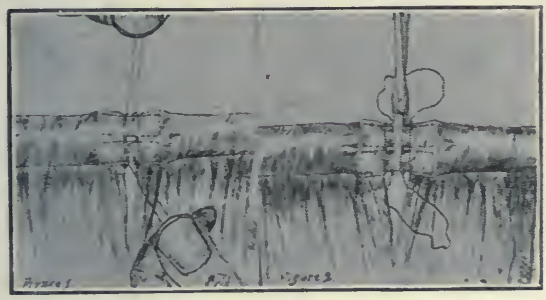
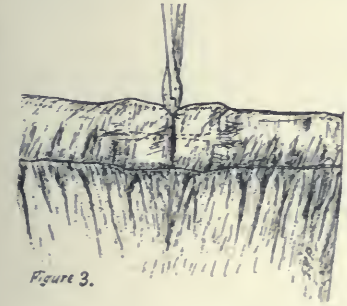


FIG. 1. FIG. 2.

The loops are removed from the plates, the edges of the bowel brought in apposition, and a suture placed in the bowel at either edge of plate (Fig. 3) to keep it in correct position while the remaining sutures are being placed.



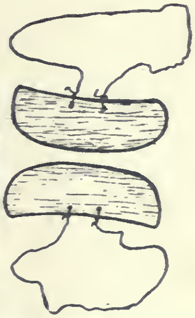


FIG. 4.—Plates with silk sutures attached.

It is optional with the operator whether a continuous or interrupted suture is used. I use the continuous suture over which I place a row of mattress sutures, the last two of which are at that part of the bowel through which the forceps enter to hold the plates. The forceps are loosened and removed and the sutures tied. The bowel contracts and brings the sutures closer together.

The splints are passed from the bowel in from two to five days.

Nearly all the anastomotic portions of the bowel removed were found to be normal in caliber.

The only thing claimed for this operation is its simplicity, no special instruments being required, and the technic being simple. In this method as in Kelly's, Hough's and many others, the object is to put the intestine on the stretch while the suturing is being done; the great advantage is the ease with which the plates are put in position, and caught with the forceps, while the plates permit the sutures to be applied with greater accuracy and rapidity, thus making it possible to dispense with an assistant in an emergency.

The "average surgeon," or occasional operator as he is styled, loses much time studying out what he wishes to do. His practice in this kind of work is usually limited and he is apt to select some complicated method, and everything goes wrong from the first. If he is using special instruments they seem to be made for any other purpose than the one for which he is trying to use them, and the elaborate description which he has read in some textbook or journal will not work out with the simplicity he had anticipated.

In methods calling for a number of threads, it is even more puzzling as the threads become tangled, knotted, twisted and mixed, there is a loss of time and more confusion, and at last when he has finished he finds himself completely exhausted and is not sure that he has accomplished what he set out to do.

It is to the operator who has had a limited amount of experience in intestinal surgery that the plate method will be of the greatest value, due to its simplicity, and the rapidity with which the operation may be performed.

The Microbe of Pertussis.—It is reported that Dr. Gengou of the Belgian Royal Medical College announces the discovery of the whoopingcough microbe. It is said to resemble Pfeiffer's influenza bacillus.

SPECIAL ARTICLES.

A RETROSPECT: BEING A STUDY OF MEDICAL MANUSCRIPT FOUND IN THE RUINS OF NEW YORK, IN 5086, A. D.

BY
ARTHUR C. JACOBSON, M. D.,
of Brooklyn, N. Y.

"No truth so sublime but it may be trivial tomorrow in the light of new thought."—Emerson.

Recent excavations in and around the ancient city of New York have disclosed many evidences, chiefly in the form of manuscripts, of the state of medical science several thousand years ago. That this noble science was then in a low, indeed relatively barbaric state, has long been known, and none perhaps save the medical antiquarian, historian, or scholar, is repaid for the time and labor consumed in delving into the few musty records that remain to us of this period of antiquity.

Curiously enough, a very high estimate of the then state of advancement of the science appears to have been held by these ancient practitioners. Quite a number of addresses before the medical societies of that day which have been unearthed are marked by a singular grandiloquence as regards the alleged high order of scientific achievement. It was probably this kind of buncombe which served as much as anything else to hypnotize the profession into a belief that it had learned much and thus to stagnate further endeavor.

It appears almost incredible to us how the socalled leaders of the profession of those days could have sustained their positions at the head of the great medical herd, considering the flimsy basis of their teachings, yet it is a fact that despite their comparative impotence in the presence of disease—sometimes impudently, sometimes naively confessed—these men successfully posed before their confrères. Personal charm and magnetism covered a multitude of sins.

Much speculative jargon concerning etiology and pathology is encountered in these old writings. What were called carcinoma, diabetes, exophthalmic goiter, puerperal eclampsia and puerperal toxemia were made the subjects of much meaningless verbiage. Except in a few instances, empiric practice, as it was known, appears to have been chiefly the basis of therapeutics. It is rather difficult to convey the exact meaning of this statement to people of the present day. The term was used most inconsistently. It meant practice based upon experience and not upon philosophic or scientific principles and was also nearly synonymous with quackery. Quackery, when practised by the socalled regular profession, might be denominated empiricism. I do not think it possible to reconcile the terms of this paradox and can only opine that certain ends may have been shrewdly served by this odd use of terms.*

Chemical and botanic products, for the most part internally administered, formed the main reliance of therapeutics. These were treated of in works on materia medica. The natural world was ransacked in the search for drugs, or remedies, as they were called. Thus quite a number of animal products were employed as well as chemical and botanic substances. It is almost inconceivable how many and how queer were these medicines. It was claimed that corrosive salts and deadly alkaloids were invested with palliative or curative effects in the treatment of disease when scaled down in dose to just the right point. The fact that a dose which would be comparatively safe for one might be deadly for another and that empiricism governed the determination of the dose—if in fact an optimum dose could have been determined by such a method—does not appear to have hampered these practitioners greatly. It was even known that the same dose would not always affect the same individual in the same way. The meaningless term idiosyncrasy was employed to "explain" unfavorable, dangerous or fatal effects ensuing upon the experimental or empiric administration of a drug and everybody was satisfied. Age, sex, climate—even the time of day when administered—and many other circumstances variously modified drug effects.

Now these works on materia medica recorded the drugs, their preparations, alleged mode of action and the experience of the profession with

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*"When we use words of Latin derivation and speak of 'mind cure' or 'mental healing' we are thought to be speaking of something very irregular and unorthodox, something that has crept on us like other forms of superstition and quackery, something to be repressed by the strong arm of the law whenever that assistance is available. But shift your wording, use a phrase of Greek derivation, 'psychic therapeutics,' and straightway you are speaking of a legimate field of medicine!"—Cabot, *J. A. Med. Assn.*, June 2, 1906.

"* * * * methods of cure are continually changing and being relegated to the limbos. This is practically unfortunate, and in itself ludicrous beyond laughter. Empirical aids, when tabooed, soon become the weapon of the outsider."—Browning, in *Medical Library and Historical Journal*, Oct., 1905.

them in the treatment of disease. With the exception of quinin and mercury no specifics were claimed, *i.e.*, medicines having a selective curative influence on an individual disease. In the case of quinin the evidence, on its face, appears overwhelming that it exercised a curative effect in "malaria." That the acute form of this disease ran a self-limited course, usually terminating abruptly, and that its chronic forms were admittedly difficult or impossible to influence, and then not by quinin, does not seem to have lessened the faith that was reposed in this drug. That during its administration it merely drove the plasmodia responsible for the disease into the viscera for the time being, was never interpreted as manifesting merely a sort of Fabian policy on the part of these organisms. Many, indeed, believed that their temporary disappearance from the blood denoted their destruction and the almost invariable recurrences of the disease were ascribed to reinfections.* Mercury was much vaunted in a disease called syphilis, although it was conceded that remote nervous manifestations, occurring late in the stage of socalled tertiary lesions, were not always prevented thereby, no matter how thoroughly and capably the secondary stage may have been treated. This naturally would lead one to the conclusion that its usefulness was more apparent than real and practically limited to the control of secondary *symptoms.* Thus it will be seen that these socalled specifics were only specific in a relative and limited sense, if one may employ such an evident solecism.

Fournier, a famous French syphilologist, reported to the Paris Academy of Medicine cases in which syphilitic infection was treated systematically and for several years by mercury, and in which "general paralyses" subsequently set in and terminated fatally. (*New York Medical Journal*, April 7, 1906.) H. Saingery (*Journal de Médicine interne*, March 1, 1906) believed that the use of mercury *favored* the occurrence, in syphilitic subjects possessing the special temperament for general paralysis, of the latter disease; 89 percent of "locomotor ataxias" were syphilitic as regards etiology (Erb), yet mercury not only failed to cure but aggravated them (Osler–Gowers). Osler furthermore spoke of the *extraordinary* frequency of the cerebral and other complications in persons who had had syphilis and who had undergone thorough treatment, and laid particular stress upon the notorious unamenability to "specific" treatment of the metasyphilitic or parasyphilitic affections of the socalled quaternary stage.

As regards all the rest of these substances, each was credited with certain salutary effect in various diseases under conditions that were generally impossible of codification. This absurdity was "explained" on the ground that the practice of medicine was an art and that it was possible to acquire a sort of ability to select in a given case the right drug out of a hundred recommended by the treatises as available under circumstances varying greatly and not capable of scientific assignment. Having done so, its use was to be continued "until something happened, either the desired effect or toxic manifestations." (F. C. Shattuck, *Boston Medical and Surgical Journal*, March 29, 1906.)*

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* "In what way quinin acts has not yet been satisfactorily explained. Some, reasoning from the toxic influence this drug exerts on many kinds of free amebas, say that it acts in malaria in the same way—that is, as a direct poison to the parasite. They support this view by pointing to the degenerative changes, as evidenced by imperfect staining reaction, exhibited by such parasites as persist in the blood after administration of quinin has been commenced. Others maintain that it acts in stimulating the phagocytes, the natural enemies of the parasite. Some experimentalists allege, on the other hand, that it paralyzes the white corpuscles. It is said by some to be the most effective against the free spores and the very young intracorpuscular forms, but inoperative against the more mature parasites; hence they advocate giving it early in the parasitic cycle. Others, on the contrary, maintain that it is operative only on the large intracorpuscular forms, and therefore advocate its use at a late stage of the cycle."—Manson, *Tropical Diseases*, London, 1903.

* "The fact that pneumonia today occupies first place in mortality statistics as the cause of death arrests our attention. * * * * * Personally I believe the treatment of pneumonia at the present day is the least satisfactory of that of any of the acute diseases.

"Thirdly, the last point which I would make, and possibly the most important, is that more of our patients are damaged than helped by the promiscuous drugging which is still too prevalent. I believe if fewer drugs were given in pneumonia a very much larger number of uncomplicated cases would recover with no medical treatment beyond an occasional laxative. The mortality today in the various hospitals seems to me unusually high. In the four New York hospitals which I have investigated, the mortality varies from 35 to 40 percent. At the Presbyterian Hospital, in 600 cases, the mortality was 34.8 percent; at the Roosevelt Hospital, from 1903 to 1905, the mortality was about 40 percent; at the New York Hospital, from 1893 to 1894, 38 percent."—Jacobi, *Therapeutic Gazette*, February 15, 1906.

As a result of these peculiar conditions many abuses developed. On the one hand what were known as patent and proprietary medicines were produced by lay manufacturers to satisfy the demands of that major portion of the public whom the medical profession failed to relieve or cure, however excellent their diagnoses, prognoses and general advice and counsel, for the people as yet vaguely believed that for every disease or symptom there was some remedy in nature.* On the other hand certain mystic schools of practice sprang into being. Conspicuous among these was christian science, a religious sect which claimed among other things that disease as such had no real existence but was referable to a belief in the actuality of matter and all material things as divined by the senses, which belief and divination were alleged to be totally erroneous. These peculiar conditions actually represented a sort of social insanity etiologically and logically related and secondary to the insane conditions characteristic of medicine itself.† It is true that a few philosophic minds realized the unsatisfactory state of drug therapeutics and fully comprehended the fact that the profession was not "making good," but the general inertia persistently continued and no reformation took place, much less advancement or progress of a fundamental, radical, revolutionary sort. Certain measures of limited utility, such as massage, electricity, the use of radium, vibration, and the röntgen ray, not to speak of methods borrowed of or adopted from nonprofessional sources, were utilized to a considerable extent and really represented abortive efforts in the direction of a rational therapy—compromises with conscience and with conditions analogous to those of the average clergyman of the day whose problem was to make compatible the principles of self-respect and of self-preservation, which usually tended to jibe incontinently.

Medicine again and again learned its lessons from outside sources. Paracelsus, Hahnemann,

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* "Drug therapeutics in cases in which drugs do no good represent either mental fatigue or mental myopia on the part of the physician; sometimes mental fatigue because the easiest thing that one can do for a patient when tired is to write a prescription; sometimes mental myopia which prevents the physician from seeing that a habit of giving placebos and of prescribing a medicine for every symptom leads straight to the 'patent medicine' habit.

"Why do people take 'patent medicines' and expect us to give them a drug for every symptom? They were not born with a desire for nauseous mixtures. They acquired it under instruction, ultimately our instruction. From the patient's point of view the net result of the doctor's expensive visits is too often a row of medicine bottles on the shelf. The thrifty patient thereupon thinks he sees a way to get the net result of the doctor's efforts without so much expense. Why not save the middle man, he says to himself, and get the goods direct? So arises the habit of going to apothecaries or to the 'patent medicine' vendors for a cure. When we stop giving placebos, cease acting as middle men for drugmakers and admit to their rightful place the nonmedicinal branches of therapeutics we shall deal a powerful blow at the 'patent medicine' evil." —Cabot.

† "I do not believe the 'patent medicine' evil and the quackery evil are entirely diseases of the community, but they are, to a certain extent, affections of the medical profession. The ease with which the public is duped by those whom intelligent men in general call 'quacks,' is partly due to quackish men in our own professional ranks. The essence of quackery is a boastful assertion of skill and infallibility, coupled with a strong desire to make money out of men's ill-health. The essence of medicine is a humble devotion to science and a burning wish to alleviate human suffering. Not all physicians are impelled by the motives which medicine demands of her followers. The sick often seek the advertising doctor and believe the false assertions of the 'patent medicine' label because they have found the medical practitioners with whom they have come in contact so incapable, so inefficient, or so exorbitant in fees that help seemed impossible at their hands. There remain, however, the secret-remedy prescribers, the commission-paying consultants, and the big-fee doctors to be disciplined by the medical profession itself. When these quackish colleagues have been ostracized a great deal will have been accomplished in the crusade to suppress quackery."—Roberts, in *Journal of the A. Med. Assn.*, May, 1906.

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"Dr. Roberts has called attention to a phase of the subject that must interest all medical men; the relations of the medical fraternity to the 'patent medicine' industry. We cannot say as a body that our hands and our spirits are clean, whatever care we may have taken individually, and the skirts of the medical press in particular are not free from contamination with the 'patent medicine' evil."—Cohen, *ibidem*.

"Dr. Roberts says that colleges that send out illiterate and unfit practitioners are potent forces in the favoring of quackery. Certain it is that illiterate and incompetent practitioners are equaled in the results of their treatment of disease by any class of like ignoramus who claims this or that quack method as a means of curing disease, and it is self-evident that, as these illiterate graduates are so numerous, many people obtain about as good results from the quacks as they do from those they believe to be qualified physicians; the only difference is that the quack obtains thousands of even Mrs. Eddy, the ruins of whose temple at Boston are of much interest to the antiquarian student of the ancient cult of christian science, taught the profession much and left deep impressions on medicine. This "yellow" element, the "poor relations" of the profession, stumbled upon empirical methods of relative value and medicine appropriated them and elucidated their rationale with great wisdom and solemnity. The manufacturing chemists did much of the therapeutic thinking, to the great shame of the profession.

The socalled medical expert was abroad in the land, bringing further discredit upon a demoralized profession.

A word further in reference to drugs as used by "regular" practitioners. It was fully recognized by the medical profession that any given effect from a drug was nearly always obtained at some expense to the physical economy. Thus all stimulation was uniformly followed by depression. Certain coaltar products (phenacetin, acetanilid, etc.) were used to relieve pain and lower temperature, but practically always with the result of depressing the heart, lowering vitality, and disturbing the vasomotor system. Bromids were employed in nervous diseases and their use was frequently productive of digestive derangements, malnutrition, disfiguring eruptions and impairment of cerebral function. And so on *ad infinitum.* A potent factor in perpetuating these conditions was the commercial spirit at the back of them all. Enormous capital and energy were employed in the manufacture and exploitation of drugs, and with the business strenuosity, money-greed, and low ethical standards characteristic of the age, no effort was spared to demoralize still more thoroughly a people already benighted and bewitched in all that pertained to disease and its management.

With the sophistry characteristic of the age, those practitioners who realized the insecure foundations of drug therapeutics, salved their consciences by conservative and practically innocuous dosage. Wise-visaged, sleek wax-figures in time's museum of medical curiosities, these gentry occupy the gallery next to the "chamber of horrors," in the latter of which now repose the effigies of that large fraternity, the ambitious but poorly trained and congenitally incompetent surgeons of the twentieth century.

What with Lourdes pilgrim-choked, the great white plague decimating the race, and cancer exacting its tribute of death, the failure of medicine in its therapeutic aspect was a grievous spectacle. Yet the trusting and expectant sick held out their wasted hands to the physicians, first of all for the bread of health, and the latter gravely deposited therein only chips from the millstones which encircled their own necks and which typified professional impotence.

The physiologic actions of drugs were but the symptoms of an effort on the part of the organism to resist or throw off offending substances, or they were evidences that the organism was being overcome. The saddest spectacle in all the practice of medicine was that of the physician administering drugs to patients who did not need them, but who did need to be told how to live.

Many enormously wealthy and philanthropic laymen gave largely of their means in the well-

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dollars for his evil practices where the physician receives but a few pennies."—Beates, *ibid.*

"While we rightly defend the insistence of accurate diagnosis which characterizes all the most competent physicians of our time, we ought not to be blind to the fact that it is possible for us to get so much interested in diagnosis (that necessary preparation for good treatment) that we use up our best energy before we get round to the knotty problems of therapeutics. When the hospital physician has carefully and skilfully diagnosed the new cases in his clinic he is apt to go home to his luncheon and leave his exteme to treat them. This habit exemplifies, I think, a deep and widespread tendency among the physicians of our time. Like the man who went back so far for the run preparatory to jumping a brook that he forgot to jump it at all, we sometimes expend a wealth of diagnostic energy altogether out of proportion to our therapeutic attempts."—Cabot, *J. A. Med. Assn.*, June 2, 1906.

"When we advise a patient to carry out at home the Nauheim treatment of heart disease, the passive hyperemic treatment of joint disease, the dietetic treatment of tuberculosis, we not infrequently lack that intimate and familiar knowledge of the finer details of the treatment, details on which its effectiveness largely depends. Furthermore, we are likely, I think, to continue, many of us, in the same ignorance of such details because we do not like them. *They bore us.* We had rather turn them over to some one else who is interested in them, but as yet we do not always do so."—Cabot, *ibid.*

"Some recent happenings would seem to indicate that the ideal of medical men must be one whose interest in the patient is limited to naming his disease; who believes little in, and cares less for, curing; whose pathology is solely anatomic. To heal and to learn the causes and prevention of disease would seem worthier and more professional aims, even if not fashionable ones."—Gould. (Biographic Clinics.)

meant endeavor to stimulate researches with the object of advancing the socalled medical sciences, more especially of attaining the ultimate aim—successful therapeutics. Institutions were founded for this purpose which employed large numbers of supposedly trained men who were expected to add to medical *resources*. With but few exceptions these simply represented a species of "honest graft" for the lucky recipients of fellowships. At least it is not recorded that their supposed objects were attained with bewildering frequency—certainly disease continued to be as baffling as ever *at the bedside*. Many more or less incoordinate data were obtained and many theories and hypotheses were added to the purely speculative phase of the subject, already hopelessly replete with confusing matter.

Innumerable medical journals, printing a vast amount of matter frequently marked by great literary charm, but representing mainly manufacturing and publishing interests and crammed with a crass mass of nostrum advertisements, were circulated constantly. Contributions of permanent and real value were infrequent, and a peculiar spirit of ultraconservatism restricted the adoption of promising methods, whereas professional enthusiasm appears to have been nearly always reserved for failures that were monumental (*e. g.*, Koch's tuberculin) and for exploitations that often verged on the unethical and unscientific. Nothing really valuable was ever adopted without a struggle.* All these things, of course, were reflected in the proceedings of the medical societies of the day.

"Almost without exception the socalled leaders of the profession do not pronounce right judgment, do not guide expertly, do not advise correctly as to what and where is medical truth. It was 22 years after a clear-headed old farmer, who had been driven to practise vaccination by many years of observation of facts, had demonstrated the value of the measure—it was 22 years before Jenner dared to inoculate the Phipps boy. The opposition of Liebig and other leaders to the theory of microorganisms kept the world in ignorance of it for a generation. The work of Morton in the discovery of anesthesia, of O. W. Holmes in that of puerperal fever, of McDowell and of Sims in gynecology, as well as of almost all discoverers, was killed as long as possible by the leaders, the judges, the official spokesmen of the profession."*

There was prevalent a peculiar form of intellectual dyspepsia and malassimilation which yielded but slowly even in the face of convincing demonstration. Somnolent, medieval, unprogressive as the traditional bureaucrats of Holy Russia, the victims of these disabilities were as dead weight on the wheels of progress.

The use of Tarnier's axis-traction forceps in obstetric practice was accounted as nothing short of malpractice for a good many years. A. H. Smith, in America, denounced its use as *gross* malpractice. The Paris Obstetrical and Gynecological Society condemned the instrument as complicated and cumbersome.

The masterly demonstrations of Gould, in relation to eyestrain in its bearing on ill-health, stand out sharply against the feeble ophthalmologic output of his contemporaries, and for a time the professional sandbag was, of course, in full utilization. Merely the temporary rejection of one of the foundation stones of the temple of science is how the spectacle impresses the medical historian and philosopher.

Apparently no earnest effort was made to wipe out the universal disease called measles, and it was reserved for the twenty-first century to realize *fully* the significance of this affection in its causative relation to tuberculosis and to learn that the prevention of measles meant the prevention, in large measure, of tuberculosis. Yet it was well known that measles always affected the bronchial glands in a way that rendered them peculiarly liable to tuberculous disease and that this tuberculous infection did not necessarily flame out for years. Thus, Osler, in 1893, wrote as follows: "The frequency with which foci are met in the lungs and in the bronchial glands is extraordinary, and the statistics of the Paris morgue show that a considerable proportion of all persons dying of accident or by suicide present evidences of the disease in these parts. The postmortem statistics of hospitals show the same thing." Biggs, of the New York Health Department, found tuberculous lesions in more than 60 percent of his general autopsies. In 125 necropsies at the Foundling Hospital, New York, the bronchial glands were tuberculous in every case. H. P. Loomis found in 8 of 30 cases in which there were no signs of old or recent tuberculous lesions that the bronchial glands were infective to rabbits, and Osler taught that the bronchial glands may be infected while the individual is in apparently good health.*

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*"It is one of the greatest tragedies of life that every truth has to struggle to acceptance against honest but mind-blind students."—Osler. (A noted physician contemporary with Roosevelt.)

*Editorial evidence from a contemporary journal. (*American Medicine*, April 1, 1905.)

The respectable Pharisees in the medical profession found their prototypes in the ultraconservatives in society at large, who always opposed progress of all sorts, unwittingly or otherwise—"they who fought Copernican astronomy, Newtonian gravitation, the existence of meteors, Darwinism, and hypnotism; they who, when these things were proved, appropriated them as their own and made it the mark of intelligence to believe them and the respectable thing to teach them."†

In the remote past, superstition and ignorance constituted the chief manacles on medical progress. This period, speaking roughly, was succeeded by one in which superstition and ignorance still played parts but were supplemented by "something in the nature of our race that prompts us *passionately* to oppose the man who comes to remedy great evils." Here at least we see passion, action, excitement, controversy. Boylston and Morton were subjected to the full force of this mäelstrom period and the latter's advent marked nearly the close of this cycle. Very subtle and most dangerous as a barrier to progress was that spirit characteristic of the early twentieth century, the spirit of ultraconservatism, marking the *period of passive resistance* as opposed to the *passionate resistance* of the middle period. We are viewing conditions broadly and take full cognizance of the existence of some truly progressive characters. This fact does not alter the correctness of our estimate of the chief tendencies of the professional body. The truth is, that men were at such pains to stand upright that they fell over backward, yet in the ordinary relations of life these men were just like their lay fellows.

Although ultraconservatism as to hard facts marked the doings of the twentieth century practitioner, this did not prevent the alleged thinkers of the profession from occasionally delivering themselves of Pickwickian addresses and papers in transcendental vein in which they showed a marked predilection for the vague and illusory. Lack of facts seems never to have hampered thought but rather to have stimulated it. Here Pegasus was given free rein. The fewer the data the lengthier the remarks thereon. It was a favorite method with the laboratory man to select as a thesis some subject offering about as much of practical value as the celebrated theologic controversies of the socalled middle ages offered on the subject of the sex of angels and kindred topics. Those who travailed through these creations were dazed at their own lack of ideas, lost in admiration of those who could build such verbal structures, and thoroughly confused on the subject itself. Were the last the object specifically sought, it could hardly have been more effectually attained.

Surgery appears to have reached a pretty high level at the hands of a comparatively few men. But these had thousands of indifferent imitators.* The anesthesia which made it

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*"The solution of the tuberculosis problem means the solution of the social problem. Whatever prevents the development of tuberculosis will prevent social misery, whatever cures it will help to cure the social ills. Inasmuch as we diminish tuberculosis among the masses we will diminish suffering, misery and social discontent, and when the problem of tuberculosis shall have been solved we shall be nearer the millennium than we have ever been before."—Knopf, *J. A. Med. Assn.*, June 16, 1906.

"In regard to the relation which exists between measles and tuberculosis, we should appreciate the danger, which seems to be a serious one, that the microorganisms of measles will render active an old and quiescent tuberculous nidus, whether it be in the bronchial or the cervical glands or elsewhere."—T. M. Rotch, 1903.

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"The relation of measles to tuberculosis seems to be particularly close, Measles * * * * seems to furnish, especially in the lungs, conditions which are favorable for the development of latent tuberculosis."—L. E. Holt, 1904.

† J. H. Hyslop, professor at Columbia University in 1900 A. D.

" * * Perhaps, 100 years hence, somebody will smile in reading the literature of our day when coming across the phrase which has become almost stereotyped, 'modern surgery.'"—Nathan Jacobson, *N. Y. Med. J.*, Sept, 23, 1905.

"Surgery was the last great wave of new life in therapeutics, for of course we must recognize surgery as belonging essentially among the recourses of modern therapeutics. Despite its brilliant and most beneficent successes, I think we Americans are somewhat prone to exaggerate the service which surgical therapeutics is capable of performing. Certainly not more than one-tenth of the sick people in the world are capable of being benefited by surgery. The other nine-tenths must, for the present, and I believe also for the future, be helped, if at all, by other methods of cure."—R. C. Cabot, *J. of the A. Med. Assn.*, June 2, 1906.

There was sometimes an evil side to the "good" surgery, as witness Stimson in the A. J. of the Med. Sciences, June, 1906: "* * * to the surgeon of large experience and frequent operations resort to operation comes easily; much of his work is done in hospital, where his results are good and his patients are mere social units stripped of possible to extend so vastly the field of surgical work was usually obtained by the inhalation of ether or chloroform and appears to have been a reasonably safe method. For the times, this was really a remarkable achievement,* but the credit for its introduction does not, strictly speaking, really belong to the medical profession proper, a dentist, Morton, having been the discoverer. It is true that he was a medical student at Harvard for a short time and that he received an honorary degree from Washington University, Baltimore, in 1849.

Of course even this beneficent gift to mankind received a hostile reception. H. J. Bigelow, a contemporary of Morton, in his Surgical Anæsthesia, quotes the following (*vide* pp. 31-2) from a New York medical journal of January, 1847:

"The last special wonder has already arrived at the natural term of its existence. It has descended to the bottom of that great abyss which has already engulfed so many of its predecessor novelities, but which continues, alas, to gape until a humbug yet more prime shall be thrown into it." Bigelow further quotes from the *New Orleans Medical Journal* for the same month as follows: "That the leading surgeons of Boston could be captivated by such an invention as this excites our amazement. Why, mesmerism, which is repudiated by the savants of Boston, has done a thousand times greater wonders." Quoting again from a leading medical periodical of Philadelphia Bigelow gives the following excerpt: "We should not consider it entitled to the least notice, but that we perceive, by a Boston journal, that prominent members of the profession have been caught in its meshes. We are fully persuaded that the surgeons of Philadelphia will not be seduced from the high professional path of duty into the quagmire of quackery by this will o' the wisp."

Surgery strongly attracted the strenuous element in the profession, for it afforded greater opportunity for the acquisition of fame and fortune and dealt largely with tangible conditions and results. The great body of physicians, or general practitioners, as they were called, were not, as a class, prosperous, and many of them had to resort to vicarious expedients in order to exist. Life insurance work, political offices, and even employment with proprietary drug firms, were greatly sought after and often in mean capacities at that. Some were the fortunate possessors of private fortunes and hence did not feel the general stress and strain. Of course the profession was overcrowded, which entailed great evils in itself.

Here and there feeble attempts in the direction of serum therapy were made. Very interesting indeed is it to read the accounts of the primitive gropings in these dark ages of science for that which would render in twain the veil of the temple of knowledge and let in the light.

I have alluded to certain extraprofessional abuses resulting from insane conditions within

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all domestic ties and relations and soon passing out of observation with but infrequent occasion to remind him of the possibility of tardy or ultimate defects. The needs of the service, the necessity of making the stay of patients in the hospital short, the atmosphere of operating which surrounds him, and usually the patient's expectation of and readiness for an operation all insensibly impel him toward it, and it must be admitted that some specific objections to operations at the home are absent from those done in hospital."

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"We are all inclined to minimize the objections to an operation, to think that if recovery follows the patient is as well as he was before his tissues were divided. He passes from observation and we do not see the overgrown or widened scar, we do not appreciate the weakness of the divided muscles or the stiffness of the opened joint. Think of the number of those who have been subjected to one or another form of laparotomy whose comfort, whose earning capacity has been seriously diminished by the resultant weakness of the abdominal wall or by the internal adhesions. * * *"

"* * * What the medical profession now ask and the general public will soon strenuously demand is a remedy for the widely spread surgical incompetency that exists in the United States. * * * * we are a peculiar people—a people of fads, and the present surgical fad is appendicitis. Of course the fad will die when the time comes, and we shall look back on it with shame, just as we do today on female castration. * * * Let us hope for better things. Let all of us, who have suffered many things and have been made desolate at the hands of these men, hope that they who come after us will receive the ministration of trained hands and sane minds. * * * The readiness with which men and women, especially the latter, submit to operations is only equalled by their indifference concerning the fitness of the operator. It is all difficult to explain unless it may be an upheaval on the surface of the existing social order of a primordial civilization that held human life cheap."—E. van de Warker, *N. Y. Med. J.*, May 27, 1905.

*Surgical cleanliness was a matter of very slow growth. It took more than a generation for its lessons to sink deeply into the surgical mind and to find expression in every-day practice. When it was found difficult to be clean, what wonder is it that other forms of progress languished.

the profession, viz., the patent medicine evil and christian science. Intraprofessional diseases, so to speak, were also rife. Within the very ranks of the profession itself grew up certain fungus-like schools of practice, chief among which were homeopathy and osteopathy. The former school resulted from a natural reaction against the gross drugging in vogue at the time and made the claim that agents which, administered in health, would produce symptoms similar to those morbid conditions for the relief of which the agent or medicine was given, were curative in disease states when given in absurdly high dilutions, which were claimed to be not weakened but rendered most potent by such dilution. We shall not discuss this curious phase of practice further than to point out the logic of its existence as a natural result of the insane state of medicine proper, if one can use such a term in speaking of the chaotic herd constituting the great body of physicians.*

Osteopathy represented a still greater secession from the drug fetich and naturally came in later than homeopathy. The adherents of these schools exerted a really salutary reflex effect upon the regular profession, just as a disagreeable disease may exert an ultimate salutary effect upon its human host, its products conferring immunity and other benefits.

I shall presently speak of another curious phase of the subject, that concerning the system of hospital visitation and administration by the regular profession. Although fraternal relations ostensibly existed among physicians, these were largely superficial in character and merely represented a sort of mechanical cohesion that would necessarily be incidental to and to some extent be found to further the general interests of any large body of men engaged in identical labors. Practically, it was admitted on all sides that professional unity was not such as to constitute a potent factor in presenting or urging the passage and enforcement of legislative measures which would relieve abuses or in some way benefit the profession or the public. When these measures *were* enacted it was usually because the legislators found other means to assist their deliberations than those provided by the profession. The latter's representatives were respectfully listened to and then the legislators made their minds up on the balance of the evidence and by the exercise of their own common sense. Much of the food eaten by the public was adulterated or preserved by chemicals, yet not even this roused the profession, personally concerned as they were with the rest of the people.

As a matter of fact the most intense rivalry ruled all professional activities. Thus the visiting staffs of the various hospitals were the closest sort of corporations, so to speak. These represented a small minority of the whole professional body and commanded great prestige because of their attachments.* They held these positions perpetually and to the exclusion of their confrères, the majority of whom were no worse if no better practitioners than they. "Few died and none resigned," and the moment a patient passed the portal of a hospital, at that moment his chosen attendant ceased to figure as a factor in the case, no matter what the latter's socalled standing might be. This killing and unfair competition, seen in its last analysis to be based upon low principles, and masquerading under the cloak of charity, still further hampered scientific progress in a way perfectly self-evident to those who are so fortunate as to live in the present and to whom these curious chapters in the past history of our noble profession furnish at least an hour's amusement if not edification.

Alas, no medical Savonarola arose to indict the conditions and those who connived at their perpetuation.

Diagnostic technic was much extolled and many elaborate treatises were written on this subject, but however much skill a few men may have acquired, the teaching of it must have been inefficient,† for there is much evidence that many common conditions, denominated incipient pulmonary tuberculosis, tubal pregnancy, incipient cancer of the cervix, postpartum retroversion of the uterus, latent gonorrhea in both the male and female, and glaucoma, were very frequently unrecognized by the general practitioners. Yet it appears that these were matters of vital importance and in the case of the first mentioned disease, of supreme moment to society as well as to the individual. To be sure, these derelictions must have also resulted from a neglect of personal culture and study and a relative inability to observe and interpret signs and symptoms. Criminal indifference must also be taken into account.

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*A small minority of the professional body was banded together in a noble and consistent effort to better conditions; this nucleus constituted the American Medical Association.

*"In Colonial days, you could not be much medically unless leagued with the prominent families—and not vastly more nowadays unless with the dominant clique."—Browning, in *Medical Library and Historical Journal*, Oct., 1905.

†For convincing evidence that the teaching was bad, consult:

Osler, address N. Y. Academy Med., Dec. 4, 1902.

S. W. Lambert, address College P. and S., N. Y., 1905.

W. S. Hall, address A. Med, Assn., Portland, Oregon, July 1, 1905.

Locke and Cabot, *Boston Med. and Surg. J.*, Oct. 26, 1905.

R. C. Newton, *N. Y. State J. of Med.*, May, 1906.

Such, my masters, were some of the strange conditions disclosed by the recent excavations of the government commission which has now been engaged for some years in examining the remains of the ancient cities along the eastern seaboard of our continent. Living as we do in a cooperative commonwealth wherein science has progressed *pari passu* with the general political, social, and ethical advancement, one finds much difficulty in analyzing, comprehending and interpreting these curious records of the dark ages of science. Now and then we encounter among them a prophetic note, frequently an expressed hope for a better and more rational order of things, showing that, as in all the ages, no matter how degenerate, some souls were great, "their ideals like the stars, which, although always beyond touch, are chosen by the mariner as his guides, to be followed until one's destiny is reached." These characters, although more or less alive to the possibilities of preventive medicine,* were, however, amidst the general eclipse which enveloped science at the time, but as fireflies in a primeval forest wrapped in the impenetrable gloom of darkest night; torchbearers, perpetuating—as the germ plasm perpetuates the life of the race, passing on in direct continuity from germ cell to germ cell, the string upon which, beadlike, each individual unit is strung—the light of true knowledge, dim reflection though it was of the full-orbed sun of knowledge and power which later was to rise and in whose rays we of today live, move and have our intellectual being.

Let us at least venerate these lone, heroic figures of the past.

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*"The highest form of service which the medical profession can perform for mankind is in the prevention of diseases. This is a field which is entirely its own. In the other departments of medicine we come within the realm of the other sciences, such as biology, chemistry, and botany, but prophylaxis is distinctly the function of medicine. Medicine can never hope to be of as much value in the treatment of diseases as it can in their prevention. Cholera, smallpox, puerperal septicemia, yellow fever—it is here that humanity owes its greatest debt to medicine. But curiously, treatment must precede prophylaxis; for it is in the long and futile period of treatment that an intimacy and a familiarity with the disease is bred, out of which grows the knowledge of the disease which makes possible successful prophylactic measures.

"It is in the study of the prevention of disease that medicine has no rivals and is the least apt to be misunderstood. This realm is not invaded by the charlatan or the pseudoscientific sect. The 'schools' of medicine have not to do with prophylaxis. They are not interested here. Intelligent and scientific effort in the prevention of disease is tangible and can be measured, and is freer from confusion than is therapeusis. In the treatment of diseases the forces of nature are just as kind to the mercenary quack, with his 'incomparable elixir,' as they are to the conscientious homeopath, with his harmless waters, who hopes only for the health of his patient. The patients of both will recover; and so, too, will the patient who is given some drug according to the most approved and rational indications. The first two will be done no damage; the last may be either harmed or helped; but misunderstanding and credit misplaced have been always the accompaniments of the art of treatment.

"What has been done with cholera can be done with typhoid fever. The 1,500 persons who died of this latter disease in this State during the past year are a needless sacrifice, for medicine has developed the knowledge which, if applied, would make typhoid fever an obsolete disease. Politics alone stands in the way. If the medical profession were given *carte blanche*, power to eliminate typhoid, it would be done. Medicine has perfected the knowledge of this disease and the means for its prevention, and the people want the disease stopped, but the legislative representatives of the people are busy with mergers and tariffs and appropriations and jobs, while the pale faces of those 1,500, dying of a preventable disease, are seen only by the profession of medicine. When some community is awakened by an awful epidemic, it arouses itself, and some petty local measures are applied, always successfully, to prevent the disease; but what is done for a country village should be done for the State, for the country and ultimately for the world—and the disease would end.

"This will be done—it should be done now, but it will not—and then typhoid will pass into history, a conquered disease. In the meantime, *your* son, on the threshold of life's work, and *your* daughter, with the roses of health in her cheeks, and *your* wife, the mother of the laughing babe, and *you*, to whom these observations are addressed, shall return in the autumn, and lie down on your bed and die, for the mergers must be put through, and the tariff must be tinkered, and the appropriations must be passed round and the jobs are meat and drink." *N. Y. State Journal of Medicine*, May, 1906.

"There is no reason why a man who has become infected with typhoid from a city's neglect should not sue for damages as he would for personal injury sustained from falling through a defective sidewalk." —W. J. Mayo, Address A. Med. Assn., Boston, June, 1906.

DIGEST OF LITERATURE.

SOME RECENT IDEAS IN INFANT FEEDING.

BY
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of Philadelphia.

The wealth of literature on the artificial feeding of infants is sufficient proof that we are still far from obtaining a perfect substitute for breast milk. Much progress has been made in this direction, however, since the principles of percentage feeding, laid down by Rotch, have been generally adopted and practised. The basis of infant feeding is, and no doubt long will be, cow's milk. The original idea of percentage formulas was to obtain a mixture, in which the proportions of fat, sugar, proteids, etc., would correspond closely to those found in human milk. More recent investigations have shown that other factors than the relative quantities of these elements must be taken into account. The quality of the various food elements in cow's milk, the development of the infant's digestive powers, the recognition of various forms of infantile indigestion, are among the factors that have made the question of infant feeding more complicated. I propose, in this review to take up some of the more important questions, and give the recent views on them.

Proteid Digestion.

This has always been the most troublesome question in the use of cow's milk for infants. The trouble lies not only in the excess of proteids in cow's milk over human milk, but also in the difference in their chemistry. The proteids of human milk consist of 0.6 percent caseinogen and 1.4 percent lactalbumin, while those of cow's milk are made up of 3.25 percent caseinogen and 0.75 percent lactalbumin. The lactalbumin is not coagulated in the stomach by rennet, but passes in a liquid form into the intestines, where it is digested and absorbed without difficulty. The caseinogen, however, forms curds in the stomach, which curds are digested by pepsin in the presence of hydrochloric acid. In the case of cow's milk the curds are coarse, bulky and dense, while those of human milk are soft, fine and flaky. It can be readily understood that the infant's stomach, being adapted for digestion of the latter, frequently balks at the tough curds of cow's milk. Numerous are the plans that have been proposed to overcome this difficulty.

Whey Mixtures.—One method consists in the use of whey to make the milk mixtures. Westcott was the first to call attention to the value of this method, and among the recent contributors on this subject are Machell, and Dunn. In whey the caseinogen has been removed by coagulation, and only the lactalbumin remains. At the same time, however, most of the fat is removed; this deficiency may be remedied by the addition of a high percentage cream, which contains little caseinogen. Before adding the cream, the whey should be heated to 150°–155°F., to destroy the rennet ferment. The prolonged, exclusive use of whey to supply the proteids of milk is open to the serious objection that the digestive powers of the stomach remain undeveloped from want of exercise. Its use is, therefore, indicated only in gastrointestinal disorders, to tide over the period of indigestion. As the child improves, caseinogen and fat should be gradually added.

Alkalies.—The addition of alkalies, such as lime water or bicarbonate of soda, was originally based on the supposition that human milk is alkaline, while cow's milk is acid. More recently, however, it has been shown that the reaction of both depends greatly upon the time of observation and other factors. It is now claimed by Southworth and others, that the addition of alkalies in large amounts prevents entirely the coagulation of milk by rennet in the stomach, thus allowing the milk to pass in a fluid form into the intestines, and relieving the stomach entirely of the burden of digestion. In smaller amounts the alkali delays gastric digestion until sufficient acid is secreted to neutralize the excess of alkali. The addition of these substances to milk is, therefore, to be recommended only in cases of undeveloped and difficult digestion, the quantity to be gradually diminished and finally omitted, as the indications warrant. The prolonged use of alkalies is claimed to prevent the proper development of the stomach's digestive powers.

Sodium Citrate.—An exception is made to these statements regarding alkalies in the case of sodium citrate. The addition of this drug to milk, to prevent the formation of thick curds, was first suggested by Wright in 1893. No use was made of the suggestion until Poynton took it up in 1904. Its value has since been confirmed by Variot, Ausset, Shaw, and Vanderslice. Numerous laboratory tests have shown that the addition of sodium citrate in varying proportions to milk either prevented its coagulation by rennet, or made the curds much softer and finer. The character of the curd is quite different from that obtained after the addition of bicarbonate of soda and other alkalies. Poynton believes that this action is due to the formation of a sodium caseinogen, instead of the ordinary calcium caseinogen of cow's milk. Shaw, however, believes that an unknown and more complex combination occurs. Clinical tests show this to be a most satisfactory way of controlling gastrointestinal symptoms and increasing the digestibility of milk. Its cheapness and ease of application recommend it, especially in dispensary cases. The indications for its use are gastrointestinal indigestion from proteids, with loss of weight, habitual vomiting, and offensive undigested stools. In such cases, after the usual purgation and starvation, the child is started on a simple mixture of 1 part milk to 3 parts water, with the addition of 1 to 3 grains of sodium citrate for every ounce of pure milk used. As the amount of milk in the mixture is increased, the amount of sodium citrate is increased in proportion, and its administration may be continued indefinitely, or until all symptoms of milk dyspepsia have disappeared. In this way stronger milk mixtures can be given than would ordinarily be digested, and the child's weight will correspondingly improve. A convenient method of dispensing the drug is to order a solution, in which one teaspoonful will contain the dose required to be added to each bottle.

Cereal Gruels.—Perhaps one of the best ways of rendering the proteids of cow's milk more digestible, is by the use of cereal gruels as diluents. By mixing barley, rice or oatmeal water with milk, instead of using plain water, the curd, when formed, is flaky and finely divided, and therefore is more readily digested. Many pediatrists formerly objected to these gruels, on the grounds that starch digestion is very imperfect in infancy, and only becomes developed towards the end of the first year. But investigations have shown that starch is much better digested in infants of all ages than was formerly supposed, and the practical experiences of many authorities prove that these gruels are well borne by the youngest babies. The dilution of cow's milk with rice, barley or oatmeal water, therefore, seems to be a safe and effective mechanical way of breaking up the caseinogen curd, and is to be recommended in preference to other methods that tamper with the chemistry of the milk. Some cases of carbohydrate indigestion will not tolerate this method, and then resort must be had to the other means.

FAT DIGESTION.

Holt has called attention to the fact that disturbances of digestion arising from an excess of fat are quite as serious as those from the use of too high proteid percentages. The infant's gastrointestinal tract has a limit of fat digestion, beyond which it is well not to go. This limit varies in individuals, but in an average child should be put down as 4 percent. In fact, Jacobi has claimed for many years that the fat percentage in modified cow's milk need not go above 2 or 3 percent. An excess of fats in the food may arise from the use of rich Jersey milk, containing 5 to 5.5 percent fat, or from the intentional increase of fats to overcome constipation. Infants thus fed may gain rapidly and unusually in weight for a certain length of time, until an acute upset occurs. In other cases the disturbances are more gradual in onset, and consist of loss of weight, habitual vomiting, intestinal catarrh, diarrhea or even chronic constipation, with undigested fat in the stools. Occasionally severe nervous disturbances, such as tetany and convulsions, may occur. The treatment of fat indigeston is obvious.

Top Milk Mixtures.—In connection with fat digestion the question of top milk mixtures may be discussed. The use of diluted top milks in the feeding of infants has been recently advocated by Glazebrook, and Gittings. Both of these authors give elaborate tables, setting forth the approximate percentage of cream in the upper layers of milk, and show how certain percentage mixtures can be produced by proper dilution and modification. The great fallacy of this method, as pointed out by Chapin, and by England and LaWall, lies in assuming even an approximate constancy of fat percentage in these top milks. There is likelihood, therefore, of introducing the factors of fat deficiency or indigestion into this question. However, the top milk method is a very convenient one for home modification in average and easy cases.

CARBOHYDRATE DIGESTION.

Cane Sugar.—Jacobi insists on the addition of cane sugar instead of milk sugar, in making up the deficiency of carbohydrates in cow's milk mixtures. He claims that cow's milk contains just the right quantity of milk sugar for its easy digestion and assimilation. An additional quantity of lactose will favor an excessive development of lactic acid, which throws out the casein as an indigestible precipitate. Cane sugar, on the other hand, tends to counteract the rapid conversion of milk sugar into lactic acid, and is thus a good preservative of the milk. Moreover, it is readily absorbed from the digestive tract without much change, and is therefore most valuable as a food element.

Buttermilk.

This by-product in the manufacture of butter has long been used by the laity in Holland and other European countries as an infant food. But it is only within recent years that its value has been recognized by the medical profession. The Dutch physicians, de Jager and de Mattos, were the first to call attention to it, and its praises have since been sung by Baginskey, Hubner, Salge, Stooss, von Massanek, Rensburg, Ramsey, and many others. Its cheapness and universal accessibility recommend it for use among the poorer classes. The composition of buttermilk is as follows:—Proteids 2.5–2.7 percent, fat 0.5–1.0 percent, sugar 3.0–3.5 percent. Its sour taste and acid reaction are due to lactic acid fermentation. This is, on the face of it, far from being an ideal infant food; but for some unknown reason it is well borne by healthy infants, and can be successfully given to sick babies where all preparations of sweet milk have failed. The casein is already precipitated in a very fine, soft curd, which is apparently digested with ease. The lactic acid prevents bacterial fermentation. In spite of the low fat percentage, its prolonged use does not seem productive of rachitis or scurvy. The buttermilk should be obtained fresh from the creameries, and sterilized at once, to prevent further acid formation. It may be given pure, or diluted to varying extents or, as is usually done, prepared somewhat as follows:—To a quart of buttermilk is added a level tablespoonful of fine rice or wheat flour, and two to three heaping tablespoonfuls of cane or beet sugar. With constant stirring this is then slowly brought to a boil. It is then poured into hot sterilized bottles, stoppered with sterile cotton, and put on ice until needed. When the child's digestion warrants it, the buttermilk may be modified by the addition of cream and sweet milk in varying proportions. The mixture as here described has proved of special benefit in infantile atrophy resulting from chronic dyspepsia. It may also be given in acute conditions, after the usual cleansing of the gastrointestinal tract and withdrawal of food for 24 to 48 hours. Buttermilk has been found useful by Rensburg in all three forms of indigestion, namely, proteid, fat and carbohydrate intolerance. In the last form the flour should be omitted from the mixture. If fresh buttermilk is difficult to obtain, a condensed, powdered form may be used, several brands of which are on the German market.

Pasteurization.

Although this process is still used to a great extent in the preparation of milk for infants, recent authorities are showing a tendency to disapprove of pasteurization, and insist on obtaining a pure, fresh milk for feeding in the raw state. Perret has shown that milk contains ferments that play an important part in the digestion and assimilation of milk; these ferments are destroyed by pasteurization. Bergey has demonstrated that pasteurized milk, after the lapse of some time, will contain many more organisms than raw milk of the same age. He attributed this to the fact that pasteurization destroys the lactic acid bacteria. These organisms normally exert an inhibitory influence on the development of certain spore-forming bacteria, that are not destroyed in the process of pasteurization. Another point is that in raw milk, the process of lactic acid formation, by its smell and taste, give an indication of the degree of staleness of the milk. In pasteurized milk this indication is wanting, and a large bacterial content may be present without giving any evidence of this condition. Hence, the efforts of pediatrists and sanitarians are now directed toward the rapid delivery of a cleanly milked product, in order that this deceptive process of partial sterilization may be abandoned.

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DISEASES OF THE KIDNEYS.

A Digest of Recent Articles.

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There is a marked tendency, especially among German authors, to give up the time honored division into interstitial and parenchymatous nephritis and to substitute for these terms others which approach more closely the true pathologic conditions. Senator[1] after stating that both tissues are affected in all cases, says: "The more chronic the process the more marked is the overgrowth of interstitial connective tissue and the thickening of the vessel wall. A difference exists only inasmuch as sometimes the growth extends from the glomeruli and here is most marked and sometimes occurs mostly in the intertubular tissue. The final outcome, if the patient does not die, is always the same. Contraction of the tissues and destruction of the glomeruli and tubules." Acute nephritis is merely that which has not been long in progress and it may be divided into three varieties which can be distinguished from one another clinically as well as pathologically. These are: Acute tubular, acute glomerular, and acute diffuse nephritis. Acute tubular nephritis is easily recognized. It occurs usually as a result of intoxication, for instance, with potassium chlorate or lysol, more rarely as a result of severe infection or after chilling. The urine is scanty, turbid and dirty or reddish brown in color. The sediment consists largely of tube casts and of renal cells in a state of hyaline or fatty degeneration. There is no edema but we find evidence of the action of the toxic agent on other organs, cardiac weakness, jaundice and various other toxic symptoms. Glomerular nephritis is shown by very scanty urine with large amounts of albumin but few or no casts or renal cells. Edema is a fairly constant accompaniment. Diffuse nephritis shows the symptoms of both, scanty urine with large amounts of albumin and casts and renal cells and the presence of edema. Of course in all these conditions the character of the urine will vary somewhat according to the amount of water and other factors, so that it is not always possible to determine from a single examination which form is present.

There are three varieties of chronic nephritis: (1) Parenchymatous, which always is preceded by the acute form and either ends fatally or changes in the terminal form; (2) primary interstitial, resulting from chronic intoxication and (3) arteriosclerotic, beginning with changes in the bloodvessels. Each of these forms tends to develop into a terminal form, the typical contracted kidney. Vogel,[2] follows the same classification for acute cases and divides the chronic forms into those with and those without induration of the kidney. The forms with induration are further divided into the primary indurative (chronic interstitial nephritis), the secondary indurative (secondary contracted kidney) and the arteriosclerotic type. Councilman[3] divides the cases pathologically into acute nonsuppurative interstitial, acute glomerular, acute tubular, chronic interstitial, subacute and chronic glomerular and amyloid kidney.

Symptomatically the relation of albuminuria to nephritis is attracting considerable attention and various attempts are being made to determine under what conditions albumin may pass through kidneys which are not diseased. Castaigue and Rathery,[4] have shown that children of certain parents showed a marked tendency to exhibit albuminuria under circumstances which would ordinarily fail to cause this, and finding that certain of these were born of nephritic or eclamptic mothers, they tried experimentally the effect of injecting nephrotoxic substances into pregnant animals. They found that the offspring showed the same tendency to albuminuria as was seen in the children first noted, and after discovering that nephrotoxic substances were present in the amniotic fluid of pregnant animals with renal disease they decided that such substances were transferred to the blood of the fetus, thus reducing the resistance of its renal tissue. That a tendency to albuminuria is not common in children is shown by Koliski and Weigert[5] who administered albumin in large quantities to normal children without causing any appearance of it in the urine. Clement Dukes[6] considers that albuminuria is frequently found at the period of adolescence and is rarely the precursor of nephritis even though it may last several years. In such albuminurics, care should be taken to avoid overwork and to provide for plenty of outdoor exercise. The bowels and skin should be kept active. The idea of a physiologic albuminuria is also upheld by Senator (l. c.) who says that albumin in the urine is always "abnormal" but not always "pathologic." It may occur in normal persons as a result of unusual or excessive exercise, marching, mountain climbing, or after unusually cold baths. Socalled orthostatic albuminuria which occurs when the person is walking but ceases when he lies down is, however, pathologic, because standing erect cannot be looked upon as an unusual exercise.

The condition is probably due to a slight circumscribed nephritis following some local infection, perhaps tonsillitis, and tending toward complete recovery. This conception of orthostatic albuminuria is confirmed by a case reported by Kennedy,[7] in which nephritis developed after the albuminuria had existed for two years. The question of albumin passing through healthy kidneys comes up for consideration in a long article by Teissier.[8] He considers the question of aceto-soluble albumin in urine, by which he means albumin which, after precipitation by heat, is dissolved by addition of acetic acid. Such albumin is not necessarily or even as a rule dissolved by other acids nor is its precipitation prevented by addition of acid before heating. In some of the cases in which this phenomenon is observed the chlorids and phosphates are present in very small amounts and this form is ordinarily seen in patients on milk diet. Teissier believes that the albuminuria is due to a badly borne or too long continued milk diet and it may be found even after return to full diet, with plenty of chlorids and phosphates, if milk is ingested. It consists in a special inability to digest milk, perhaps from a peculiar action of the gastric ferments, which by precipitation of the casein, give rise to a certain amount of whey, the albumins of which, according to Vendeuvre, are aceto-soluble. These being absorbed but not digested may be eliminated by the kidney with their original characteristics. Most of the patients in whom this alimentary form occurs are dyspeptics with gastrectasia. Teissier goes on to show that aceto-soluble albuminuria is usually associated with disease of the liver and he concludes that the affection is due to improper functioning of that organ which permits proteids to escape into the blood stream in a form in which they are excreted by the kidneys as aceto-soluble albumin. Many cases have history of malaria and of syphilis, both of which diseases show a strong tendency to involve the liver. In cases in which it occurs inconstantly the condition is not serious. The same opinion with regard to nephritis not being shown by inconstant albuminuria is held by Stengel,[9] who says that we cannot make a diagnosis of Bright's disease by means of a single examination of the urine, even if casts are found. Albumin in traces or occasionally may occur in various conditions which have no connection with nephritis. The possibility of venous origin of albuminuria is brought up by Taucereaux[10] in an article on albuminuria in diabetes. He believes that when there is no disease of the kidneys the albuminuria is due to irritation of the medulla by the sugar in the blood causing disturbance of innervation, and not to irritation of the kidneys by the sugar. In many cases of diabetes, the albuminuria is due to arteriosclerosis or to intercurrent disease, especially tuberculosis. Burbet[11] also admits the possibility of albuminuria, which if not normal is at least not associated with gross lesions of the kidney.

The treatment of nephritis has been revolutionized in recent years by the demonstration that the ingestion of large amounts of water and inorganic salts is often of more harm than large amounts of albumen. Furbringer[12] believes that large amounts of albumen should be given to supply the waste from the albuminuria. Meat is in his opinion better than milk and plenty of it should be given. Ernberg[13] states his belief, that in chronic nephritis the diet should consist of food rich in proteid and with plenty of meat continuing for a certain time and followed by a period of proteid starvation during which the albuminuria decreases. In beginning uremia the diet should contain no proteid. McLester[14] emphasizes the tendency to give too little proteid but believes that milk is the best food. He cautions against excessive administration of water. Butler[15] also advises free diet with avoidance of meat, and Ziegler,[16] in an article on scarlatina, states his belief that milk diet during this disease will prevent the occurrence of nephritis. Dupour, Poter and others believe that a salt-free diet has the same effect and Guinon[17] advocates a raw meat diet without salt during the disease. Shattuck[18] divides chronic cases, for purposes of treatment, into those with and those without edema. In the first class water and salt ingestion must be limited, while in the second a careful dietary suited to the case should be prepared. He does not think red meats are any more harmful than white and believes that the fad of restricting meat to "chicken breast" is simply a deceitful way of limiting the total ingestion of meat. This extreme limitation is likely to do harm in chronic cases. In acute cases, on the other hand, complete starvation for several days is the best treatment and should be continued as long as it is advisable. Elliott[19] also divides his cases clinically into cases with edema in which water and salts should be reduced, cases with high tension in which proteid and water should be restricted as much as possible and cases with low tension in which water and proteid may be given freely. The danger of toxins from intestinal putrefaction is especially emphasized by Croftan.[20] In chronic cases he believes the milk diet is not nourishing enough and that it contains too much water and proteid as compared to the carbohydrate and fat. The loss of appetite which follows too strict limitation of the dietary is often productive of harm. Proteids may be given freely if digestion is good and improper and irritating end-products are not formed. Chlorids should be withdrawn as much as possible and the water ingested should never be much more than that excreted by the kidneys. Pulley's[21] article on pyelitis may also be quoted here. He believes that in case of renal inadequacy all proteid should be cut off from the diet.

As regards the restriction of chlorids Miller[22] states that even in normal persons, chlorids in excess are not well excreted and in nephritis they are likely to cause edema or even uremia from edema of the brain if taken in too large amounts. The possible bad effects of ingestion of salt are also shown by two cases reported by Bing,[23] which in the course of chronic nephritis suddenly showed complete inability to excrete salt in the urine. Elimination of chlorids was provided for by the vomiting of large amounts of salty liquid. Both cases recovered and the power of the kidneys to excrete salt returned. Experiments by Brandenstein and Chajes[24] show the dependence of edema on chlorid retention. They injected salt solution after performing double nephrectomy and found that the salt content of the blood and viscera increased very little but that the extra salt was gotten rid of by edema of the limbs, ascites and hydrothorax. As no edema or effusion follows similar injections in normal animals, the authors suggest the hypothesis, that certain substances retained by the known action of the kidneys render the bloodvessels more permeable and thus permit the escape of the excessive fluid into the body cavities. Fluid is probably withdrawn from the tissues by the greater salt content of the injected fluid. The decreased power of diseased kidneys to excrete salts has also an interesting bearing on Teissier's paper quoted above. He shows that the aceto-solubility of albumin is frequently dependent upon a low chlorid content of the urine and is therefore an indication that the kidneys are not excreting the normal quantity of chlorids and thus it may be an indication of renal inadequacy. Teissier explains the phenomenon by suggesting that "the molecule of albumin deprived of the saline particles which unite with it so easily, combines more readily with the acetic acid to form an acid albumin." Josserand in discussing Teissier's paper calls attention to the importance from a prognostic standpoint of urines, the albumin of which is prevented from coagulation by the addition of acetic acid before boiling. In acute nephritis there is no salt retention and in the albuminurias accompanying the infectious fevers, typhoid, pneumonia, scarlatina, etc., the test has no prognostic importance and is rarely positive, "but in the course of evolution of renal sclerosis we may find it a useful indication and I am in the habit of noting the number of drops of acetic acid, necessary to prevent coagulation by heat. It is to be presumed that the acetic reaction of which I speak is parallel to the inpermeability of the kidney and by a rapid clinical test we may determine its degree." The reaction disappears if salt is added to the urine and appears in all albuminous urines if they are diluted. If the kidneys are not excreting a sufficient amount of fluid their blood supply may be increased according to Plessi[25] by bandaging the limbs and thus forcing more blood into the trunk. The elimination of water and chlorids is increased from 50 to 100 percent, while the organic substances are not affected. Grünwald[26] believes that diuretin also acts by increasing the blood supply of the kidneys and he has seen the amount of albumin in the urine markedly reduced in parenchymatous nephritis. by doses of 30 grains. He believes that this effect is due to improved nourishment of the renal epithelium.

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RECENT EDITORIAL OPINIONS.

Journal of the American Medical Association.—TOBACCO AND ARTERIOSCLEROSIS: Josue, Adler and Hensel, and others have by means of tobacco produced in rabbits a form of arterial degeneration similar to that induced by adrenalin. Neither of these types is exactly like those of arteriosclerosis in human beings but it is an extreme view to say the lesions are in no way comparable. It appears fair to assume that nicotin is capable of setting up arterial changes in man, though the exact role of tobacco in the production of arteriosclerosis can only be conjectured.—EPONYMIC DISEASES AND SYMPTOMS IN MEDICINE: The attachment of the names of individuals to symptoms or to diagnostic methods has its advantages and disadvantages, depending on the point of view. From the historic and sentimental standpoint it is legitimate and of distinct advantage but the labeling may be done with poor judgment. The use of proper names should be restricted to actually new discoveries. The naming of unimportant modifications is bad and multiple naming is worse.—POSTMORTEM EXAMINATIONS OF BURNED BODIES: The complexity of the problems presented by burned bodies is apt to be great and to investigate them intelligently may require a high degree of special knowledge and expert training. The American system of medicolegal practice is unfortunately not calculated to lead to the development of such experts. Further, the custom of not having postmortem examinations in cases of accidental death in general, which includes many from burns, is an unfortunate one. —AN AMERICAN DOCTOR OF THE OLD SCHOOL: A striking example in our own day of sacrifices quite equal to those of Ian MacLaren's Weelum MacClure is found in the story of the labor of Dr. Wilfred Grenfell for the fisher folk of the Labrador Coast. As a result the North Coast and its people have become better known and some visitors have gone for the purpose of seeing the fishermen and their sacrificing physician. It is said he is shortly to visit the United States.—THE EFFECT OF STRENUOUS EXERCISE ON THE HEART AND KIDNEYS: This subject is one that can be studied and is important enough to be studied. Recent observations do not extend over sufficient periods of time. The urinary picture is that usually associated with an acute nephritis and late studies indicate a decided effect upon the heart and incidentally on the blood-pressure.—CONTAGIOUSNESS OF LATE SYPHILIS: It appears there has been overconfidence in the supposed nonvirulence of tertiary syphilitic lesions. Physicians themselves should exercise greater care in this respect for some of the reported cases of infection were in members of the profession. Patients should also be instructed regarding the possibility of infecting others while in this stage of the disease.—THE ALLEGED INCREASE OF INSANITY: We are inclined to the view that the great apparent increase of insanity is at least partly due to the more exacting standards of sanity. We may be overdoing things as a people in our present methods of social progress, but it is reasonable to believe that an acceptable equilibrium will be reached before things get to the worst. The increase in some communities is now apparently at a standstill. Insanity is a problem of the day but not so much of one as the alarmists would have us to believe.—THE NATIONAL CONTROL OF LEPROSY: This question is of moment because more than one-half of the lepers in United States are native born. A national leper home properly located would obviate difficulties arising under present methods, as for instance the unfortunate circumstances surrounding the death of the leper in West Virginia. Such an institution would in no way be a menace to the health of the community.—CAISSON DISEASE AND MEDICAL CERTIFICATES: It appears that some workmen have evaded the requirements of a medical certificate before engaging in work under increased pressures by purchasing those papers of other men. This is a striking reminder that in the future if medical certificates are of value they will have to be accompanied by photographs. If proper precautions are not taken, certificates may prove of more harm than good.—A DANGER IN ORGANOTHERAPY: An interesting development of late years is that preparations of the suprarenal gland, at least in animals, produce arterial degeneration. Such preparations have been used freely not only by physicians but patients have been given them with, in some instances, advice for free use at rather short intervals. This is an example of the dangers that may possibly be present in other substances, considering our very limited knowledge of most of the organotherapeutic remedies. It behooves us to be reasonably careful in the application of such substances.—NEWSPAPERS AND QUACKS: The *Cleveland News* has done good work in exposing facts, which if presented by physicians, might be imputed to false motives. A reporter, after being pronounced sound by several reputable physicians, visited some of the quacks and was told he was suffering from several serious diseases and nearly every one told him he had some affection which the reporter, in a lay publication, has to conceal under the title of "etc." He secured medicines and publishes pictures of some of the quacks. This ought to be of inestimable value to the people of Cleveland.

Boston Medical and Surgical Journal.—THE MODERATOR BAND IN THE HEART: Tawara has found in this supposed anomalous band muscle fibers showing the microscopic structure of fibers of the conducting system and regards it as a part of that system out of its ordinary subendothelial position instead of a congenital anomaly. The bands are usually in the left ventricle, extending from the upper portion of the septum to the base of a papillary muscle. In this exposed position they are much more liable to injury. Tawara believes the moderator bands do not produce murmurs.—ETHER DAY AT THE MASSACHUSETTS GENERAL HOSPITAL: This day, the sixteenth anniversary, was observed on October 16 in the amphitheater in which ether was first administered. Dr. Warren spoke of the desirability of keeping alive the memory of the introduction of ether, not only in Boston but in other cities as well. The scalpel and probe used at the first operation under this anesthetic were exhibited.—LOWELL LECTURE ON MEDICAL SUBJECTS: Several of the lectures this winter are to be given by physicians, on subjects bearing the closest relation to medicine. Dr. Janet will speak on "Psychotherapeutics," Dr. Minot on "The Problem of Age, Growth, and Death," and Dr. Chittenden on "The Nutrition of Man." It is a matter of more than passing interest that questions of this type should interest an audience with no special claim to medical knowledge. It is a hopeful sign. The presentation of certain practical medical facts in the form of semipopular lectures has a distinct educational value and the custom is growing.—TREATMENT OF BACTERIAL DISEASE BY THE THERAPEUTIC INOCULATION OF BACTERIAL VACCINES: Few of the claims of Wright have been controled by animal experimentation, the latter apparently being regarded of little importance. On this there will be much difference of opinion in this country and in Germany. Wright has contributed very much to medical science but until animal experimentation has supplemented clinical observations, consent to some points in his work must be withheld.—A BERLIN HOSPITAL IN HONOR OF VIRCHOW: After many years in building, this hospital, than which a more fitting memorial to Virchow could not be devised, has been dedicated. In architecture it is a masterpiece of dignity and serviceability. The buildings are 60 in number. Beauty and usefulness have been shown not to be incompatible.—A "CITY OF CRIME:" Mr. Mosby's statistics regarding 1,794 convicts in the Missouri State Prison at Jefferson City tend to antagonize some rather deeply-rooted theories. Nearly one-half had led temperate lives, 73 percent had received a fair education, 71 percent had belonged to religious organizations, and all but 105 were native born. While these and other questions relating to criminology are unsettled it might be best to agree that the purpose of conviction should be the protection of society rather than the punishment of the criminal. Conditions leading to incarceration have in many a case been beyond the prisoner's will or power to control.—THE DANGER OF LEAD SERVICE PIPES: This subject is taken up in detail in the latest report of the Massachusetts State Board of Health. Carbonic acid is the essential agent in the action of water upon the pipes but they are not wholly free from danger when used for service water. In view of the facts it is somewhat extraordinary that many cities and towns are still using lead pipes. Cement-lined are on the whole the most satisfactory substitute.—DR. SANGRADO REDIVIVUS: Blood-letting has for many decades fallen into desuetude because in its palmy days a century ago it was practised absolutely without discrimination. Phlebotomy is often very appropriate and sometimes life saving. Governed by certain principles, largely by the one of treating the man instead of the disease, the physician may use the lancet in cardiac dilation, venous engorgements, arteriosclerosis and emphysema when characterized by dyspnea, lividity and high tension, pulmonary hyperemia and edema (pneumonia), pleurisy, cerebral congestions and hemorrhage, hepatic congestions, uremia, suppressed menses, hyperpyrexias and acute infections.

Medical Record.—CLINICAL VALUE OF CRYOSCOPIC EXAMINATIONS: There can hardly be any question that cryoscopy, especially of the blood and of urine from individual kidneys, is of the utmost diagnostic and prognostic aid in renal surgery. The limitations of the method are now well defined. If the surgeon bears these in mind and does not exclude other means of diagnosis the freezing-point determinations will not prove disappointing. —FRUIT AS A FOOD: Recent studies show that in general fruits are wholesome, palatable, and attractive additions to our diet. They may profitably be eaten even in larger quantities than they are at present by the majority of people.—THE KINDERGARTEN: Attention has recently been called to the unfavorable side of kindergarten work. It is claimed that up to the time of actual school work the child needs fresh air, sunshine and exercise, the physical rather than the mental faculties being cultivated. It has been proved that the average child free from kindergarten work until the seventh year will do better work in school than will his classmate who for two or more years has been in such an institution.—TWENTY-FOUR-HOUR PNEUMONIA: Recent statistics show that 10 of 1,057 cases of pneumonia was of this type, the process terminating suddenly within 24 to 48 hours. The general symptoms and local signs, even to the sputum, are those of ordinary pneumonia. The affection is usually in young healthy persons and the prognosis is favorable. The infection appears to be of a weakened type.—A SOCIETY FOR THE IMPARTIAL INVESTIGATION OF NEW REMEDIES: The American Pharmacological Society has issued its first working-bulletin. So far as can be determined by a careful study of this, "the plan of the society would seem to be one that deserves the confidence of the medical and pharmaceutical professions. The society works in the open, the evidence pro and con is accepted on its face value, all the facts regarding the drug are placed before the profession, and the latter is left free to form its own judgment after weighing these facts. That is what the physician needs. He wants to know whether the remedy offered for his use in practice is as it is represented by the manufacturer, and if not, what it is. He can then decide for himself whether the preparation is good or bad, and does not need a committee to decide for him. The American Pharmacological Society apparently has a work of great utility before it, and if it continues in the impartial manner of its first essay it will certainly deserve the confidence and thanks of both physicians and pharmacists."

New York Medical Journal.—THE FATE OF CALOMEL IN THE BODY: Researches indicate that the acid of the stomach has little or ne effect upon calomel. Nesmer regards pancreatic juice as the most potent factor in effecting solution of the drug. The kidneys, liver and large intestine retain portions of the calomel for a considerable length of time. As to the form of mercuric compound formed from the calomel we are not enlightened.—THE RELIEF FUND OF A GREAT CITY: Of the 116 million dollars required for the running expense of New York City in 1906, more than eight millions are for the maintenance of the public health and relief of the sick and poor. This great amount appears to be judiciously spent. Doubtless many of the subjects of public charity are unworthy but it is unwise to discriminate too closely. The undeserving would better be helped than to withhold succor on any but the most palpable reasons.—ENDOTRACHEAL GOITER: At least 15 instances of this condition have been reported. Of these, 12 were in women and 3 in men. Their pathogenesis is the greatest point of interest, appearing due to tumor growth in a congenitally misplaced fragment of thyroid gland. —THE SANATORIUM: Sanatoriums are now popular and have greatly increased in number of late years. It is known they are not for paupers, they contain fewer patients than the most hospitals, and hence are supposed to entail fewer vexations than do the latter institutions. In the main the sanatorium is deserving of public favor but on the whole is of much more importance to the public than to the medical profession. The young physician therein improves only in a narrow specialty. It is expensive and risky to establish and maintain a sanatorium. It may aid, however, better than any other agency, in working out certain problems in medicine.—THE GERM OF WHOOPINGCOUGH: A third bacillus has been added, by Bordet and Gengou, to the list of organisms said to be the cause of pertussis. Much more detailed researches are necessary before any one of them can be regarded as the undoubted cause of the disease.—THE ANACHRONISTIC MARTINET: It appears that the variety of dignity which protects itself with armor plate has not yet disappeared from the army. A recent instance showing that at that time at least all martinets were not dead is that of a medical officer incorporating in a report "The commanding officer's attention is respectfully called to the existence," etc. The report was returned to the post surgeon endorsed: "Respectfully returned to the post surgeon, Fort

Barrancas, Fla., who will remove the objectionable phraseology contained herein. The commanding officer's attention may be requested but not called.''—The Sanitary Condition of the Isthmus of Panama: A satisfactory refutation of the pessimistic accounts of the sanitary condition of Panama lies in the monthly reports of Colonel Gorgas. There has been no yellow fever for nearly a year. The sick rate among the 29,555 employes of the canal commission is very low. Colonel Gorgas is entitled to great credit for the work he is doing in the canal zone and should be encouraged. Partially informed critics should refrain from attacking this subject about which they are so little informed.—The Shameless Sneezer: Sneezing has to be tolerated even in solemn gatherings but society is too tolerant of the vulgar sneezer who maliciously prolongs the explosion. This is a mere piece of vulgarity but the sneeze itself may be a menace to the health of bystanders. There appears to be an increasing number of those who do not shield the nose with anything while sneezing. It is possible that various diseases may thus be spread and it is a pity the shameless sneezer is not suppressed.

Lancet.—What is Specialism: Much of what is called specialism is the result of demands created by ignorance of the public rather than of any legitimate division of labor in the profession. Generally speaking it appears to be an error of judgment for a young man to start practice with the idea of becoming a specialist. There is tendency for general practitioners to neglect certain areas which are marked out as the property of a few individuals. "If we are to have new limitations set up (and the tendency of the present day seems to be in that direction), if we are to have a specialist for obesity, for dyspepsia, for gout, for the liver, and for the heart, what will be left about which the general practitioner may be expected to possess ample knowledge and where and by what means will it be possible to train up such men as Jenner and Gull and Andrew Clark for the benefit of future generations?"—Nonmedical Coroners: For more than 60 years the *Lancet* has strongly insisted on the urgent need for the appointment of medical men as coroners. A physician was recently censured by a coroner for advising a certain course regarding a patient when there is not the slightest doubt that this course was the best that could be devised. The amount of legal knowledge required by a coroner is very small and may be readily acquired but the medical knowledge needed is very great. The most urgent reform in connection with the coroner's office is the appointment as coroners only of men who have had medical training.

St. Louis Medical Review.—A Suggested Solution of the Medical Expert Question: The informal commission appointed jointly by the Court and the jail physician of St. Louis, to examine those under arrest on a criminal charge if suspected of insanity, has now had trial of 16 months. In not a single instance has the report of the commission been rejected by the jury when the defense has refused to accept the report and brought the case to trial. This commission, without legal standing, has accomplished much. Why should not the legal profession throughout the country advocate an agreement between medical societies and judges for the appointment of a board of physicians to report to the Court on all medical expert testimony on both sides in criminal cases?

Montreal Medical Journal.—The Telephone: A physician at home for one day tabulated his telephone calls for 12 hours with a total of 37 of which at least 22 did not deal with the practice of medicine. Telephone service is a benefit but the physician with but one instrument is at the mercy of every one within a hundred miles. A private telephone, with the number known to a certain few only, is not satisfactory. A better way would be to have the telephone available to the public during certain hours of the day and private the remainder of the time. Regular patients could thus have access to their physician at all hours.

Interstate Medical Journal.—Ibsen in Psychiatry: Emphatic protest is made against the interpretations of Ibsen's works as is being set forth in medical journals or by physicians in lay journals. Aside from heredity, his pet theory, and neurasthenia, Ibsen had no knowledge of medicine and his works are purely literary instead of setting forth the dramatic possibilities of puerperal psychosis, paranoia, and other mental derangements. A physician of repute who reads into Ibsen's characters, except Oswald Alving, nosological symptoms of psychiatry, is guilty of a laxity of his scientific calling.

Beer vs. Absinthe.—The statisticians announce that the consumption of beer in France has increased more than 40 percent during the past five years, while the amount of absinthe used has shown a corresponding decline.

NEWS AND NOTES.

Resignation of a House Staff.—The six members of the house staff of the German Hospital in Williamsburg, Borough of Brooklyn, N. Y., have resigned in consequence of the failure of the board of directors to dismiss the supervising nurse of the hospital for assuming to countermand certain orders given by the house physician for a patient. Although the act of insubordination appears to have been a specially flagrant one, the directors declined to punish the offender with anything more severe than a reprimand.

Meat Scandal in Vermont.—The Attorney-General of Vermont, in a report to the Governor of the State, charges gross negligence on the part of the Cattle Commission of that State. It is alleged that the Commission did not strictly follow the law, which requires that the carcasses of condemned animals shall be buried, and, in several instances, that the Commission took the condemned animals to a slaughterhouse and had them slaughtered there, and disposed of the carcasses for fertilizing purposes. It is also said that 200 condemned cows were sold by a member of the Commission to a drover, who took them into Massachusetts, where all but 20 of the animals were slaughtered and sold for food.

Death of the Leper Raschid.—The death is reported of George Raschid, the Syrian leper, who during the summer was driven from place to place because of his disease. He finally died of an affection of the heart in a shanty near Clarksburg, W. Va. An exchange says: The story of his treatment during the months preceding his death does not reflect great credit upon the intelligence and humanitarian instincts of the people at large.

Physicians' Cooperative Drug Store.—It is rumored that about 20 physicians of Youngstown, O., are about to open a cooperative drug store. According to the published statement of one of the promoters its object is "to make money for ourselves and save money for our patients."

The number of medical men in the world, according to a French paper quoted in *The Medical Record*, is 228,234. "Of these there are in Europe 162,333, distributed as follows: In England, 34,967; in Germany, 22,518; in Russia, 21,489; in France, 20,348; and in Italy, 18,245. In England the proportion of doctors is 78 to 100,000 of the population. In France it is 51, and in Turkey 18. In Brussels it is 241, in Madrid 209, in Budapest 198, in Christiania 181, in Vienna 140, in Berlin 132, in London 128, in Athens 123, and in Paris 111."

Fertilizing Vegetables with Human Excrement.—The question has become so acute in the Philippines that the Philippine Commission has taken legislative action and passed a law which makes it a penal offense to use this substance for fertilizing purposes. The two important sections provide:

> No farmer, market gardener, or other person or persons shall use any human excreta, excrement, dejecta, or the contents of any water or earth closet, privy, vault, cesspool, latrine, pail, or other receptacle for human feces or urine as a fertilizer for any land on which is grown any article or product intended for human food or human consumption, or allow any human excrement, excreta, or dejecta, to be sprinkled or applied in any manner or for any purpose to any crop, product, or vegetable growing on said land. A fine of not less than $25, nor more than $100, or imprisonment not to exceed six months, or both, shall be imposed upon each person found guilty.

Tuberculosis Crusade in Tenements.—Dr. C. S. Millet, who has been appointed secretary of the new Massachusetts Tuberculosis Commission, declares that the commission is likely to recommend to the Legislature a campaign in every tenement house district of the State to apply the "home cure" of outdoor sleeping to the treatment of tuberculosis.

Abolish Tuberculosis Board.—The members of the Vermont Tuberculosis Commission have concluded that their duties can be attended to efficiently and conveniently by the State Board of Health. In their biennial report soon to be submitted to the Legislature they will recommend the abolishment of the commission.

Prize for Cure of Sleeping-sickness.—In view of the devastation caused by the sleeping-sickness among the natives of certain districts of the Congo Free State, as well as among Europeans residing there, the king of Belgium has offered a prize of 200,000 francs to any person of any nationality who shall discover a cure for the said sickness, and also an additional sum of 300,000 francs for the purpose of making researches and experiments toward exterminating the plague.

Tuberculosis in the Navy.—In his annual report Surgeon-General P. M. Rixey of the navy calls attention to the fact that tuberculosis is increasing in the navy and marine corps. The report states that if gunshot wounds, drowning, burns, and local injuries are eliminated, tuberculosis as a cause of death in those branches of the military service would stand second in 1900, fourth in 1901 and first for the past three years. In 1895 the ratio of cases per 1,000 was 3.2, in 1905 it was 6.1.

Accidental Death of a Centenarian.—The death is reported from Frankfort, Ky., of a colored woman named Anne Jane Mitchell, who was fatally burned at the age of 117 years on October 11. Her husband, who died recently, is said to have been a centenarian.

The Yield of Radium.—It is stated that the radium mines at Joachimstal, in Austria, recently supplied the Vienna Academy of Science with ten tons of uranium ore, and this has yielded a very large amount of radium, which is to be used for research. The mines are being converted into a radium cure resort. A local laboratory for producing radium salts has been established, and the springs are serving as medicinal baths.

Cocain in India.—The cocain habit is reported to have become so serious a menace to prosperity in India that the government has formulated the most drastic regulations to check the increase of the vice. Even the mere possession of the drug by the laity is a punishable offense.

The Incomes of British Medical Men.—According to a recently published estimate, the incomes of English physicians have fallen off 25 percent during the past six years. Among the causes assigned for this decrease are the diminishing morbidity from epidemic influenza, which was very prevalent in 1900, the greater freedom from other infectious diseases, and the diminution in sickness during the winter months attributable to the mildness of recent winters.

Emergency Fund for British Medical Profession.—The British Medical Association has now organized the contemplated "emergency fund" to be created by voluntary subscriptions, to assist members of the profession in various parts of the country in defending their legitimate interests when threatened by organized bodies. It is intended to apply the fund by way of grants to practitioners, or to divisions or branches of the Association, to meet expenditures in local disputes or otherwise.

France's Diminishing Birthrate.—Public attention in France has again been drawn to the national peril involved in the constantly diminishing birthrate, by the publication of the vital statistics for 1905. The births in France for the year numbered 807,292, showing a decrease of 10,937 from the total of 1904. The reason for this decrease is not to be found in a reduction of the number of marriages, in which the statistics show a slight increase over 1904, but apparently arises from the aversion of the French people to raising large families.

Radium and the Matter of Imposts.—The official status of radium as an import is proving a difficult question for the board of appraisers to determine. The Dingley tariff law makes no specific provision for radium, and importers have objected to the ruling that radium as a chemical salt is subject to a duty of 25 percent. Application has been made to the board to review this decision, and the matter is being investigated by the General Appraiser.

Sleeping-sickness Cured.—According to reports said to have been received at Marseilles from French physicians in the tropics the majority of 150 patients suffering from sleeping sickness have recovered under the use of thymol.

Suit Over a Quarantine.—Damage suits against members of the Health Board of Englewood, N. J., for $10,000 by D. W. Valentine, a dentist of that city, have been filed at Hackensack. His residence and office at 110 Eagle street were quarantined during the illness of his daughter, Margaret, last May, as City Physician V. C. Bradner pronounced her ailment scarlet fever. The family physician, Dr. D. A. Currie, diagnosed the case as an affection of the skin and not contagious.

Intemperate Women Freed.—Acting under the orders of District Attorney Moran, an officer liberated the 30 inmates of the Massachusetts Home for Intemperate Women at Boston. The action was taken after the discovery that instead of being a home, the institution was practically a prison, the inmates being deprived of their liberty and forced to work from morning until night, the proceeds of their labor going to the home.

Leper Politicians.—The lepers on the Island of Molokai have for the first time in the history of the settlement a real election. Under the new county act the settlement is created a county, but all the functions of government are given to the Board of Health, except the election of a Deputy Sheriff. A large number of candidates for this office has arisen, and a campaign which surpasses anything ever known anywhere else is in progress. The people have absolutely nothing to do but take part in political campaigns. They are housed and fed at public expense, and a political campaign affords them excitement and relief from monotony.

American Medicine

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Christian imitation of Christian science is the last straw. Certain clergymen, jealous of the alleged successes of this delusion, are openly advocating a spurious imitation of its methods and a return of medical superstitions which have long been cast out of modern churches. It is openly asserted that the modern clergy still have divine power to heal the sick by prayer, as of old, and that the church must resume its proper medical duties. It is a confession that the church has in some way failed to give that mental calm which is so helpful to the sick. One physician in London has described the therapeutic uses of prayer, and every physician welcomes a clergyman's visit, but the assertion of divine healing power is a relapse to the dark ages. We hope, in the interest of public health, that this new outbreak will end where it began.

The cult of Eddyism has become a gigantic graft for it is charged that "Mother" Eddy's keepers have been appropriating to themselves the huge sums of money constantly pouring in from the million or so of rich dupes, and like all other grafters they have tried to continue the business as long as possible. The spectacle of this old woman, on the verge of the grave, decked out in ridiculous finery and mentally too enfeebled to appreciate her surroundings, being dragged out for a few seconds before newspaper reporters in a childish attempt to keep up the ghastly deception still further, is certainly pitiful if not criminal. If the members of this cult do not blush for very shame, they must be dead to moral sensibilities indeed. Their claims of freedom from physical sensations should not be carried to the extent of the obliteration of morality yet this is what is to be expected from those who will deliberately allow a helpless sick child to die, rather than raise a finger to save it. After her death we must expect to hear of the fight for her millions. They are now said to be like vultures waiting for death, so that they can pounce upon the remains. It is a modern mecca.

The authorship of "Science and Health" is even in doubt. It is now claimed that a "Reverend" J. Henry Wiggin revised the manuscript for Mrs. Eddy in 1885, and that one Calvin A. Frye was mixed up in the fraud. Wiggin died with the lie on his Reverend conscience, and bequeathed the knowledge to Mr. Livingston Wright, of Boston, who now makes it public. It appears that the original manuscript was full of misspelling, devoid of punctuation and chaotic in arrangement. It not only showed gross ignorance but also stupidity for some parts flatly contradicted others. Wiggin rearranged it, corrected the numerous erroneous historical and philosophical references and then added a chapter. It seems incredible in this modern age, but would rather fit into some Arabian Nights' story. It merely shows that our intelligence does not increase with the civilization.

Any miserable fraud finds dupes, if it is only called Christian.

The duration of a medical craze is an interesting topic for investigation. A review of all past ones, particularly those of the last century or two, gives the impression that their rise, culmination and collapse, follow something in the nature of a general law. Given a remarkable personality, an absurd mysticism which appeals to every one except the most matter-of-fact minds, an audacious assurance of cure and much advertising, and there are always millions of people with chronic or incurable complaints—or simply complaints of nothing in particular—who find extreme gratification if not actual comfort in chasing after such a medical will-o'-the-wisp and are willing to pay a handsome admission fee to the performance. Then come disappointment, coolness, discovery of the fraud and collapse of the cult. It all requires from 10 to 20 years. No amount of enlightenment as to facts or argument, ridicule or denunciation seems to shorten the life of a craze, as its disappearance waits upon the slow mental processes of the masses, and of course nothing can prevent the birth of new ones. At the present time there are probably hundreds if not thousands of people of easy morality, who are racking their brains to invent methods of duplicating Christain science or going it one better—for the money in it. Twenty years hence one of them will succeed.

The Metric System.—In November we printed a letter by Dr. William H. Seaman, of Washington, D. C., showing the present trend of the metric advocates toward compelling everyone to use the French system whether it is the most suitable or not. *American Medicine* wishes to promote the interests of every part of the profession, and has attempted to give voice to that large practical part which is finding the metric measures unsuitable and is drifting back to the old ones which have proved their suitableness by centuries of use. The very fact that it is necessary to form a society for the promotion of the metric system is proof of its impracticality except for a small part of the nation. If it was the best it would drive out all others without help. As long as its advocators contented themselves with spreading the gospel, they were doing grand work, but when they began the crusade to compel everyone to use it, they became a bit tyrannical. The interests of medical practitioners demand that a halt be called to the movement.

The real reason why the metric system fails is seldom mentioned—it is unnatural to do mental arithmetic except by dividing into halves or thirds. This fact was first mentioned by Herbert Spencer and was the basis of his bitter opposition to the decimal system. Practical measures survive because they can be repeatedly divided by two or three to get other units. The relations to each other have grown up naturally and cannot be replaced. It is infinitely easier to comprehend fractions like $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, etc., and these are instinctively used by practising physicians, instead of an odd number of milligrams which patients cannot comprehend. For these reasons the metric system has not "made good" in practical medicine if we may use a new and expressive term. There is indeed a developing opposition to it, which does not bode well for its ultimate survival as a universal system, although scientists cannot do without it. Its use was made compulsory among army surgeons, and we understand that they are not at all unanimous in its favor—indeed there is some strong opposition by reason of alleged dangers and impractical cumbrousness. A few wish an early return to measures which have proved their practicality by survival. We have called attention to the matter with the definite policy of checking inconsiderate changes, and to voice the opinions of practising physicians who rarely if ever express themselves in print and who never have use for metric measures. The small part of the nation who find its use indispensable are not considerate of the needs of the vast majority of mankind. Tyrannical compulsion will only land us in the condition of Switzerland.

The society for the promotion of the metric system will receive our hearty support as long as it does not seek to force others to use what they do not need. In addition it is wrong to argue that manufacturers will sell more goods if they use metric measures—they are sensible men and competition is so keen that they will supply any demand. They will use the new system if they sell more thereby and there is no need of a society to tell them. In other words, the metric system will force itself in wherever needed as it did in the laboratories—the present law legalizing it, is as far as we dare go. The medical profession as a whole will not welcome a change and we should be very guarded in advocating ill considered laws. The long drawn out arguments, pro and con, published in *Science* during the last year or two, show very conclusively that even the scientists are divided in opinion as to the wisdom of a change, and no other men are more fully aware of the extreme value—the indispensableness—of the metric system. We must go slow and revise our opinions now and then so as to avoid forcing men to do what may be harmful. Many unwise things have been said both for and against the new measures, and we refer our readers to the columns of *Science* for particulars. It is a great shock to find baseless assertions, and we must be careful in accepting any statements on either side. Each system is useful in its sphere and neither can drive out the other. If the practising physician uses the metric system he will find himself thinking in both, and resorting to the dangerous and nerve wearing habit of constantly translating from one to the other—for the great majority of his patients will never use the metric system even if it is made compulsory by law. Congress is wise in delaying action until we come nearer to unanimity—but it is evident that we never will be unanimous. Perhaps 99.9 percent of English-speaking people never see a laboratory or have use for a decimal system of measures, and they will continue to use the simple ones originally derived from the thumb, foot, arm and a grain of barley—corn—a system still used by physicians who nearly always compare the size of a tumor with some wellknown object. Uniformity throughout the world is very desirable and must come in time, but the measures must be easily conceived fractions of each other and not decimal ones.

Metric measures were found to be indispensable in all scientific work, that they promptly drove out all others from the laboratories of the world and needed no law for the purpose, a fact we have repeatedly noted. It has been a grievous error on the part of any scientist to assume that every other man should find them equally suitable. Switzerland adopted them, long ago, taught them in the schools, and a new generation has grown up apparently unacquainted with any other, yet the old ones are used by the majority of the nation because they are more suitable. Observing Swiss have asserted that the old measure never will be displaced and the country is cursed with legal standards which cannot become universal. In France and Germany the same complaint is heard. French arithmetics teach both systems because both are used and instead of the new system being a time saver in education as generally explained, it is the opposite after a century of trial. Our land is divided into sections, the roads are one mile apart, and farms are 160 acres —so these two measures are permanent fixtures—the metric measures cannot replace them. The exact sizes of the inch, foot, yard, and pound are immaterial, and laws standardizing them are necessary. The practical man does not care whether the yard stick is a meter long or 36 inches, but the engineering interests are the ones balking at the expensive change.

We early adopted a decimal coinage but found that we instinctively used half and quarter dollars, and have entirely discarded mills, dimes and eagles, and though the dime is coined, it is generally called ten cents. The French likewise have drifted into fractions of their practical measures such as demi-liter and have discarded the rest as unnatural. We will do the same if the metric system is forced on us. The English have repeatedly tinkered with their coinage but nothing would work and the experiments failed because they violated the natural law of division by halves in mental arithmetic. They use a sovereign, half sovereign, quarter sovereign or crown, one-eighth sovereign or half crown or two and one-half shillings. The shilling likewise is better than our quarter as they have a half shilling or sixpence which we also use as a "levy" or twelve and one-half cents. Twelve pence in a shilling is more natural than our twenty-five cents for they have a quarter shilling of three pence, and is held to for this reason. We have neither a half or quarter of our "shilling." The extra half cents lost in our purchases of an eighth dollar's worth annually amount to an immense sum and cause an enormous amount of clerical labor to account for them. Our violation of this natural law has cost us dear in our coinage alone. It will be far more serious in all other practical affairs of the farmer, mechanic and laborer who are the ones who in the end always make or unmake laws. We cannot revolutionize nature by law. We regret that Dr. Seamans has stated that those who oppose the introduction of the metric measure "are mostly people who have no practical knowledge of the system whatever." On the contrary, according to recent publications, the users of it furnish some of the strongest opponents for they see its impractical side. One of our correspondents has been trained in it, used no other for years, was taught that no other should be used, and yet has been compelled to abandon it in most of his work, as it proved to be unsuitable in mental operations. Paper workers must not be so selfish or short sighted.

Opera Bouffe Medical Literature.—Suppose that in pretending to give an Epitome of Medical Progress as regards diphtheria or tuberculosis an editor should omit all references whatever to the antitoxin treatment of the one and the infectious nature of the other? Precisely that is being done in many kinds of medical treatment and writing. Within a year a famous American professor of medicine has stated that everybody knows many gastric and intestinal diseases are due to eyestrain. Soon afterward an equally famous American surgeon says all such diseases are to be treated solely by surgery and no hint of the ocular origin is even mentioned. For several years, for instance, a Chicago firm has issued a socalled epitome of Progress in Ophthalmology, edited by Dr. Casey A. Wood. The publisher expressly states that the editors have been instructed to forget that they are specialists and to chronicle only those items, and epitomize those contributions relating to the work of the general practitioner. Despite this excellent program the book on ophthalmic progress collates only the most recondite and trivial articles of the year, having no relation whatever to the needs of the general practitioner; it absolutely omits all mention of hundreds of contributions of good physicians pertaining to eyestrain which have most vital relations to the work of the general practitioner. Such instances of specialism gone mad and of comic-opera medicine deserve and will get the hearty condemnation of the profession.

Flattering medical prejudice for selfish reasons is the source of a good deal of socalled medical practice and medical literature. Fashion and the Zeitgeist rule this department of "Science" quite as vigorously as it does the drama or magazine literature. Would-be or actual professors are as desirous of presidencies, chairmanships, LL. D. degrees, social and professional success, as are the "climbers" and the newly-become rich for leadership or inclusion in the smart set and automobile aristocracy. Physicians long hungry for these sorts of dishonorable honors with stupid astuteness care nothing for medical truths and cures, and think only of the antipathies and prejudices of those who form the committees on membership in decadent medical societies; they are paying secret court to the trustees who give honorary degrees; they are on record as in favor of the truth which assures a lucrative consultation practice and against the new truth which is later to consign them to oblivion. It is the day's success alone which to them is satisfying, of course, but it is characteristic of cunning, that while seeking to ignor the new truth to death, it will "throw anchors to windward" and finally sail into port as the champion of the successful revolutionary cause it had mistakenly cursed. Such men will "erect monuments to those they have martyrized." To get them on record and remember their records is a professional duty.

The Dramatist Again After the Medical Men.—Two if not more great dramatists have turned their attention to the doctor and are making him the hero or the moralist of their plays. To exploit his new serum Paul Adam's "scientist" needs money, and the theater-goer is asked if his adoring wife should sell her scientific husband to another in order to give the serum vogue. Shaw's *The Doctor's Dilemma* concerns "the most tragic thing in the world—a man of genius who is not also a man of honor." Moliére began the fun, and Shaw may be said (or hoped?) to end it. But the capital distinction is that Moliére's doctors were stupid while supposably sharp, and Shaw's are sharp while supposably stupid. Both lead to the same finality—the desirability of an ending of both the sharpness and stupidity. Will the desideratum be attained? And there's the rub! Certainly not before the profession learns to distrust and deny its leaders who lead only to their own individual, selfish and personal success. It is interesting, if not instructive, to find that Shaw's impecunious, tired, commonplace old practitioner is singled out for saving because of his character and honor. Dr.

Blenkinsop is not the LL. D. Meteoric Professor who flashes about as President of everything, who never cured a human being of any real disease, and who is the Universal Lecturer on any vague, useless and brilliant subject designed to make the injudicious say, "What a great man am I."

"Cutter Walpole," "Sir Patrick Cullen," and "Sir Colenso Ridgeon" are, beside "Dr. Blenkinsop," those typified in Shaw's medical drama. Of the fashionable surgeon Walpole, it is said that he had "worked hard at anatomy to find something fresh to cut at," and who was making a large income by cutting out the "muciform sac" from the bodies of rich people. According to the caustic Cullen, for all the good the operation did them they might as well have had their hair cut. Common sense triumphant is represented by Sir Patrick Cullen, although one wonders how and why he got his baronetcy. Sir Patrick finds that all new medical theories are merely repetitions of old wellknown truths. Who would dub such a man, *Sir?* Ridgeon with his wonderful cure for consumption is, of course, the man who gets the coveted title, and Ridgeon cures his patient, an artist and a genius without the trace of a moral scruple in his make-up. But another fashionable physician succeeds in killing the cured scamp in three days by his ignorance and machine-like prescribing. Shaw's illogical wit and caricature sociology are, of course, not to be taken too seriously, and we must remember that he writes with Britishers for his models. The stilted pomposity and limitless nonsense of fashionable medicine over there is but the flowering of the saprophytic plant we are manuring with such assiduity over here. Luckily our healthy democratic tendencies will make an end of the temporary parasitism, and we are fast learning to choose the leaders who truly lead, and the representatives who really represent American medicine.

The repetition of humdrum nonsense when one has nothing new to say is the last resource of the weary writer and the fashionable. For how many years is it now, for how many generations indeed, that the ills of mankind have been ascribed to errors of diet, improper food, "the mistake" as Dr. Osler says, "of chewing and digesting improperly?" The result—for the ignorant laity and their quack leaders, while hating us, finally take us at our word—the result is the multiplication of a hundred or a thousand crank sects, vegetarians, raw-meat eaters, raw-everything eaters, chewers by machine methods, and heaven only knows of the rest, who base their hopes of the millenium upon the pernicious principle of tinkering with the choice of food, methods of mastication, etc. For a hundred years the food supply of the people of the civilized world has been improved in every way—as to constancy, quality, perfection of preparation, cooking, and methods of eating, until the frightful disease, dirtiness, and innutritiousness of the food of the past is now, even with the poorest, a thing almost unknown, and despite this the dietetic humdrummers persist in ascribing the increase of the diseases of digestion and assimilation to bad choice of food, overeating, bad cooking, improper mastication, and improper digestion. There is a big illogicality in the reasoning. Is it not time to look for other causes than the old dietetic ones which, indeed, have almost disappeared, and *pari passu* with the increase of the diseases of the digestive organs?

The Index Medicus.—When this publication ceased in 1899 after having been issued for twenty years its loss was keenly felt by the medical profession of the entire world. Its reestablishment in 1903 occasioned the greatest satisfaction among all those who ever consult medical literature; the gap of four years, but partly filled by a badly arranged French publication, had shown the true value of the Index. The revival was made possible by a grant of $10,000 annually for three years by the Carnegie Institution at the end of which time it was believed, or at least hoped, that the work would be approximately self-supporting. That this has not been done is proved by the fact that the Carnegie Institution is meditating its discontinuance because of lack of support by physicians. From a bibliographic view this would be calamitous. One testimony to its value is that soon after its revival the College of Physicians of Philadelphia passed resolutions urging members to subscribe in order that the Index might be continued. We sincerely trust that announcing the possibility of discontinuance will result in enough subscriptions to place this valuable publication on a sound financial basis.

Medical licensure was discussed by Dr. S. D. Van Meter, of Denver, in an address to the California Society,[1] and his remarks direct attention once more to the childish attempts which are made by some State examining boards to learn whether the applicant is fit to be licensed to practise medicine or one of its specialties. A medical education must include an immense amount of details which are of no practical use later, but which a student must learn or he will not understand pathology and treatment. A student must be taught the exact composition of paregoric but the sensible practitioner tries to forget such useless details. Questions suitable in the class-room are wholly out of place in the examination of a skilled experienced practitioner who has moved to another State and demanded a license.

Boards must be trusted and not bound by law to treat every case alike. If they haven't enough sense of honor, then remove the members and get new ones. Their judgment that a man is unfit for a license should be taken—that's what they are appointed for. If they are sued by an unsuccessful man who claims that a mistake has been made in his case, the law should state that in the final court hearing, their opinion shall hold unless the applicant prove them in error by reputable medical witnesses, or legal documentary evidence. An accused board must be considered innocent until proved guilty—that's the basis of all justice, but a man demanding a certificate of proficiency in anything must be considered inefficient until he proves otherwise and that's the basis of every business. Nevertheless the foolish conduct of some boards has caused discredit to be cast on all, and raised a natural prejudice in the law courts. Van Meter gives an excellent rule for boards to follow and that is to let the applicant show what he knows, and not try to discover what he does not know—the latter always fills an encyclopedia.

Standard examinations are impractical and the boards must judge each case by itself like any other jury. Certificates of prior training and experience must of course be given great weight, even if the applicant has forgotten how many bones are in the ankle, for he may not need to know them if he practises ophthalmology. To give each man a written examination is absurd—some do not require any. If the certificates are not good evidence or are not furnished and an examination is needed, let the questions be such that every member of the faculty of a good medical college can answer 80 percent of them in each subject. No question in pharmacology, for instance, is permissible unless the laryngologist can answer it. This bars out all the trifling forgettable details which only a student or specialist must know. The boards, if dishonest, might easily arrange questions so that any general practitioner will fail to answer them, but we trust them to try to be fair. So let common sense guide more liberty of action and then extend reciprocity to all who do likewise.

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[1] Cal. State Jour. of Med., July, 1906.

The war against quackery is now to be systemized—individual efforts are too feeble but have been useful like those of the prophets. A national society has been in process of organization since last spring, chiefly through the efforts of Mr. C. S. Andrews, counsel of the Medical Society of the County of New York, and it is already supported by a large number of medical and charitable societies. This is a most desirable consummation. The society deserves the active support of every physician in the land in the interests of public health. Not only is the quack to be prosecuted, but war is declared upon patent medicines, adulterated foods, and the newspapers which advertise the frauds. Public opinion is at last aroused. Let the lay press join in, even if it does lose the money now derived from the advertisements of criminals and scoundrels. The clergy are interested, as a matter of course, though religious newspapers were once the worst offenders of them all in advertising the criminals. Certain priests are still charged with compelling poor people to buy worthless strings of beads to be blessed and then hung around a baby's neck to ward off croup and fits. Let them be prosecuted also.

Excess of nutrition as a cause of tuberculosis is the astounding suggestion made by Professor Chittenden,[1] of Yale, in a discussion of the nitrogen problem. While scientists, the world over, who are investigating the causes of susceptibility to tuberculosis, are coming to the conclusion that deficient nitrogen nutrition is one of the main causes, it is certainly disheartening to have such an unsupported opinion published. The first thing done with the tuberculous is to give a generous diet to remedy the defect; even forced feeding may be wise in advanced cases. It is not likely that Chittenden's suggestion will be accepted, although it might be read by some laymen with curious dietary ideas, and confirm them in a way of living that will land them eventually in a sanatorium for the tuberculous.

The small profits in the milk business will probably always prevent a reform in methods of distribution. The poor are wedded to the idea that milk should never cost more than five cents in summer and six in winter, for those are the prices paid for generations. They do not realize that a five cent piece is not worth as much as it was twenty-five years ago. They are actually paying less for the milk. The farmer and dealer profit so little that many of them give up the business. In addition old cheap methods produced dangerous milk, and to be clean, as modern sanitarians demand, is very costly. Milk fit for babies cannot be produced for less than nine or ten cents. Such rich milk at ten cents is really cheap as compared with many meats, and the demand for five cent milk is therefore foolish. The baby is begrudged five cents a day, but the parents often consume beer *ad libitum.*

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[1] N. Y. Med. Rec., October 28, 1905.

The danger of the small colleges has been asserted to be the possibility that they will not grow big. This has been answered by another writer (*New York Evening Post,* Nov. 3, 1906) to the effect that the real danger is that they tend to grow big. We hope that the hygienic side of the matter will enter into this discussion. It is of vast importance that the boy should graduate as a strong robust member of society with a healthy brain and nervous system. Nothing is better for this purpose than the country surroundings of the small college. The pedagogs should not monopolize all the opinions on the subject. They are likely to do more harm than good, if they are not checked by medical advice.

The significance of amebas in the stools is far from being settled. Many investigators, both in America and Europe, have found certain forms so often in men who have never had dysentery and who did not subsequently develop the disease, that they have concluded that this form at least is not pathogenic at all. On the other hand, a group of pathologists in Manila report that there is no sure way of distinguishing this form from the one believed to be characteristic of dysentery, and that if amebas are found in the stools, the host has had dysentery or will have it in time unless he is properly treated. Until the matter is settled, it would seem the wisest course to consider every ameba an infection and treat the patient as carefully as if he had wellmarked symptoms. It is so serious a disease and has such disabling results even when there is recovery from the acute outbreak, that no risks are allowable.

CORRESPONDENCE.

LOCOMOTOR ATAXIA.

BY
P. M. WISE, M. D.,
of New York City.

To the Editor of American Medicine:—In a former letter which appeared in *American Medicine,* January 20, I referred incidentally to my treatment of tabes to illustrate a phase of the error inherent in the "professional attitude" now prevailing toward this disease. This has brought to me so many inquiries "What is your treatment?" that I would obtain relief in this way from personal answer. I might say, in brief, that common sense in place of professional bias (or bigotry) in the mind of a well-educated physician would lead to a proper treatment, whether in accord with mine or not. But first, the doctor must purge his mind of tradition and the fixed idea that locomotor ataxia (the same applies to allied scleroses) is a typical disease with uniform features, uniform causes, and an inevitably unfavorable prognosis. The progressive feature is not invariable, and I believe should be exceptional.

The psychic treatment is my first care with a patient. I educate him into the pathology—from a layman's point of view—and especially his own case, and he soon becomes able as myself to recognize the obscure sensory changes which are often overlooked. He is made to understand the philosophy of the various measures of treatment, the "why" of each measure, and I can assure readers if they want the best from any factor of therapy, experience will soon prove its advantages. The enthusiasm engendered by the patient's recognition of the effect of treatment when accurately predicted, is a powerful expectant force and creates a rare confidence, both desirable elements in any case.

Every ataxic suffers from sluggishness of all nervous impulse and notably of the somatic functions. The tissues and organs before treatment are dirty and unkempt. The physical "house-cleaning" is invariably neglected. More than 80 percent of the patients are constipated. The bladder is often affected by the sensory paralysis, resulting in retention of urine, putrefaction, and this by cystitis, often chronic and of long standing. Digestion is always impaired in some form and degree, although often unknown to the patient. Unless there is gastric dyspepsia the patient believes he digests "like a horse." Intestinal indigestion gives few local indications. The skin and under tissues show malnutrition, from sluggish chemical functions, I believe. Metabolism is very faulty (lazy). If neurologists would give some of the attention to the bodily functions that they now give to morbid anatomy and refined precision in diagnosis and symptomatology, their results of treatment might not be so depressingly uniform. Elimination, as may be inferred, is therefore a *sine qua non;* and by this is meant not only a correction of the constipation, but an urging of all the emunctories to their full normal capacity at least. This hint should suffice and details left to each experience, except, perhaps, to emphasize the attention which the skin requires, not only as an eliminating organ but for its manifestation of sins committed and omitted. It is inevitably neglected and invariably abused. The evidence of malnutrition often disappears under proper treatment, showing that the somatic functions are *here* amenable, at least. Any disturbance of the chemical processes is general, not only affecting nutrition but in most cases maintaining an autotoxemia, which in my belief is the chief cause of the terrible pains peculiar to this disease if not all the general symptoms. In 432 cases, the duration varying from 9 months to 18 years, there was loss in weight in all but 8 cases, and a gain in 4 only. This reduction in body-weight varied from 2 to 46 percent of the former weight. I believe that whatever success I may have had in the treatment of this notoriously incurable condition, has been chiefly due to recognition and treatment of this sluggish metabolism.[1]

Purely mechanical treatment forms a large part of tabetic therapeutics. The defect in locomotion, especially in the spread-eagle walk peculiar to these patients, indicates the remedy, and was admirably illustrated by Drs. Schwab and Allison at the last meeting of the American Medical Association.[1]

As the main point to be sought is correction of the pronation (flat-footedness) it would seem that any ingenious physician directing a bright shoemaker should get the best of the relief to be had by this means. In the same way, the education of new sensory nerve paths for those cut off by the sclerotic process depends more upon common sense than skill. What has come to be known as the Fränkel method of treatment needs to be adapted to the needs of each patient, and then it is frequently unavailing. Still in many cases, results are encouraging, especially when the patient himself is *en rapport* with the why and wherefore, and continues persistent and enthusiastic in his personal endeavor. It wholly depends upon the patient, for there is nothing passive in Fränkel's treatment of ataxia. It requires the utmost aid of consciousness, especially the centering of the attention with desire and effort; and this is quite impossible with some patients, whose passive resignation to their morbid environment makes them offensive egoists and discouraging objects to an encouraging doctor.

With the exception of the diet, this is all or about all. The diet requires more than ordinary restriction, as indicated by evidences of urinalysis and gastric secretion—not from objective signs. The ethereal compounds in the urine, and indican especially, is a sign of grave intestinal defect. However, as modern therapeutics includes these precise diagnostic requirements in all cases, the usual current methods are sufficient.

I am quite willing to reply to any definite inquiry, but cannot undertake a thesis for each correspondent.

A Memorial Tablet to Dr. Walter Reed.—The Kings County Hospital Alumni Association has placed a bronze tablet, 4x3 feet, in the institution at Flatbush, to the memory of the late Dr. Walter Reed, a former interne of the hospital. The tablet is inscribed: "Erected by the Association of Ex-Internes of the Kings County Hospital to the memory of Walter Reed, M. D., interne in this hospital, 1871, Major and Surgeon, U. S. A., chairman United States Yellow Fever Commission, 1900–1901. He robbed the pestilence of its terrors and caused the cities of the Southland to sit in peace within their gates."

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[1] In treating this condition I have used an animal gland product which is a mixture of the pancreas, spleen and Brunners' glands started into a kefir fermentation during desiccation and then triturated with sugar of milk. It is my belief that the therapeutic factor of this product is more dependent upon some decomposition product than upon the digestive ferments (like Metchnikoff's sour milk principle). At any rate, it has served my purpose well in the direction indicated, and I do not know of a satisfactory substitute. It will be found quite negative in some cases, especially those complicated by hyperchlorhydria, but usually the results are pleasing, and often most surprising. I consider it a *sine qua non* in treatment.

[1] The paper was published in the Journal of the American Medical Association, December 16, 1905.

ORIGINAL ARTICLES.

INTRAVENOUS INJECTIONS. A THERAPY OF THE FUTURE?*

BY
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A new method of administering drugs has sprung into importance, one might say, almost over night. Whether this method will represent the therapeutics of the future, as its most enthusiastic partisans claim, or merely a passing therapeutic fashion, time alone can decide. It is certain that the new system has an original idea as its foundation and even the skeptically inclined must admit that it has real importance. So I hope it will awaken interest if I give a kind of general report on the subject. I believe, moreover, that this method is to be largely used by the general practitioner. The object of this paper is, if possible, to induce physicians to make a practical application of the method. They will then be able to judge for themselves as to its merits, basing their conclusions upon practical results.

Looking back over the history of medicine, we find that the earliest and simplest application of drugs was by the mouth. Even at present this is regarded as the most natural way. It seemed the only way to the peasant who swallowed the leeches prescribed by his doctor, and who was thereby promptly cured. This method has been followed for hundreds and thousands of years and would likely always have been followed, had not necessity resulted in invention. There have been cases in which remedies could not be given by mouth, cases in which the patient was unconscious or violently resistant. In cases of immediate danger to life as in poisoning, in collapse, in obstruction of the pharynx or esophagus, the demand for immediate aid to the patient became imperative. Thus the methods of embrocation and intrarectal medication came into use. These methods, however, too often proved insufficient.

So far as we know, the practice of bringing medicaments directly into the blood was first made use of about the middle of the seventeenth century. This was regarded as the quickest and most direct method and it was also known that smaller doses would be effective because the entire dose would come into action and no chemical decomposition by the digestive juices would take place. Thus the old styled infusion was introduced. By this means emetics were administered and also narcotics and stimulants. Since ancient times venesection had been performed on an arm vein; the same veins were now used for infusion. Remedies unsuitable for infusion were sometimes selected. Occasionally even insoluble ones were injected. Bad accidents and sad experiences were the result, although wonderful effects were occasionally reported. No ideas of asepsis were held at this time and patients now and then suffered from virulent and even fatal septicemic conditions. That there were not more deaths is due to the fact that the blood itself is a mighty bulwark against infection, provided, as it is, with so many bactericidal and antitoxic substances. The old time physicians did not fail to note, too, the phenomena frequently accompanying and following intravenous infusions. They were noticed but could not be explained. The headache, abundant sweats, chills, fever, etc., would now-a-days be interpreted as evidence of septic or embolic processes. No wonder the infusions never became generally used but remained in the hands of the few who had mastered the complex technic.

The "infusion" of those days was in no way the simple procedure which we call now an "intravenous injection."

We now use a sharp needle as for a hypodermic injection and aside from aseptic precautions no extra preparation or aftertreatment is necessary. We pierce at the same time the skin and the vessel wall with a sharp canula and allow the little opening to be closed by the natural elasticity of the tissues. The old infusion, on the other hand, required quite an operation. A skin incision was made large enough to lay bare the cubital vein. This vein was dissected out and one or two ligatures passed around it and through an incision in its wall the coarse mouthpiece of a syringe, was introduced. Finally the medicament, dissolved in a considerable amount of liquid, was injected. The wound nearly always healed *per secundam*, often with suppuration, and phlebitis or obliteration were frequent sequels. The whole procedure belonged to the surgeon and it is not surprising that in spite of enthusiastic supporters, some of whom were the best men of the times, the method lost ground and was practically abandoned about the middle of the last century.

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*Read before the King County Medical Society, Seattle, Feb. 19, 1906.

But then the Pravaz syringe was brought before the world. No addition to the physician's armament has been more valuable and important than this small instrument. No man has a juster claim to a share in immortality than the French physician whose name will always be associated with this little syringe. Its sharp needle has given us a magic control over pain. First morphin and then cocain were given to suffering humanity, and hypodermic medication produced revolutionary changes in therapeutics. The old infusions were now entirely abandoned and the Pravaz syringe, at first used only for hypodermic purposes, was the means by which we substituted the modern intravenous injections for the old infusions.

Professor Baccelli, of Rome, is generally credited with being the inventor of the new method. This is really a mistake. While it is true that Baccelli and the Italian school have contributed largely to the advancement and propagation of intravenous therapeutics, it is no less true that it was not Baccelli but Professor Landerer, of Leipsic, who first, in 1881, performed an intravenous injection in the modern meaning of the term. However, the question of priority may well be avoided.

Landerer's first experiments concerned the treatment of anemia after acute losses of blood. He next experimented on animals, employing a number of different pharmaceutic substances. Finally, in 1884, Landerer made his first intravenous medicamental injections in man. This work was not published until 1888[1] which was still four years before Baccelli's first report. A short time before we first heard of Baccelli's intravenous injections of sublimate, I had, in 1892, the opportunity to make Landerer's acquaintance. I was privileged to witness and to study practically in his polyclinic at Leipsic the beginning of the cinnamylic acid treatment for tuberculosis. Landerer first used local applications of balsam of Peru and injections into fistulas of surgical tuberculosis. He then used intravenous injections of balsam of Peru principally for tuberculosis of the lungs and finally used the active principle of the balsam, cinnamylic acid, for this purpose. At first, Landerer's experiments attracted scarcely any attention outside of Germany. Perhaps this was due to the fact that the medical world was then still under the spell of Koch's tuberculin. On the other hand, the intravenous sublimate treatment of syphilis, which Baccelli brought forward in 1892, received immediate recognition in international circles.

Let us again consider Landerer's hetol treatment and discuss briefly his principal ideas. Hetol is the sodium salt of cinnamylic acid. He was convinced that a direct attack upon the bacilli themselves was difficult or impracticable. So he conceived the idea of setting up a secondary inflammation about the tubercles by chemical means, thus walling off and finally cicatrizating the tuberculous foci. He aimed to produce this inflammatory reaction by introducing into the organism an emulsion of Peruvian balsam. He assumed that the greatest quantity of the fine particles of this substance would settle down around the tuberculous foci. As foreign bodies and chemically active substances, these particles would, by chemotaxis and active leukocytosis, lead to a large accumulation of leukocytes around the foci. This, as an aseptic reaction, would be followed by the formation of fibroid tissue which, in turn, would tend to produce an encapsulation and cicatrization. The necrotic material would be calcified or absorbed. Landerer convinced himself of this by experiments. He remained an enthusiastic advocate of his method until his untimely death in 1904. Beside Landerer, many physicians, principally in Germany, subjected thousands of patients to the hetol treatment.

My own experience consists of but few cases. My attention was first directed to the hetol treatment by a former patient of Landerer himself. While in Central America I treated him for malaria. Examining him, I discovered a slight infiltration at the right apex. When questioned, he told me that, while in Germany, he had a bad cough, considerable fever, and many hemorrhages. He had been treated at Landerer's sanatorium and the result had been excellent. Indeed, I found few physical signs. There were no cough and no expectoration. Among the patients I have treated by this method were two or three with cases too far advanced to be benefited. In several other patients there was evidently a marked improvement. They all increased in weight, while cough and sputum were diminished. The sputum was not always examined for bacilli. I am sorry that I cannot be more definite in regard to these cases. I left Central America in 1899 and returned to Europe and so lost sight of the patients. The treatment always lasted over several months.

The two drugs which Baccelli applied intravenously were mercuric chlorid and quinin. I used both for a time but later dropped the mercuric chlorid injections for all cases except very aggravated ones, for in most cases it seemed to me that the conditions were very well met by the old inunctions and the intramuscular injections. In malignant and urgent cases, in which immediate results are necessary, intravenous injections are indicated and I think them extremely valuable. I remember notably one case of this kind. A young man who came under my care in 1896 was in an extremely desperate condition. He had become blind three weeks before. He was paralyzed and lay in a semicomatose condition. There were no other symptoms. He had been treated for some time but apparently without diagnosis. I succeeded in making a diagnosis of syphilis of the brain and at once put him on the intravenous injections of mercury. Ten days later the man could see and was able to move about. In four weeks more he was a healthy man. Any delay here would have had the gravest consequences. We could hardly expect a sudden improvement and speedy recovery like this from any ordinary treatment.*

A second case may here be mentioned:

A man, aged 45, has suffered for the last seven years from an ulcer on his face; it is the size of a 50 cent piece, and has been refractory to all treatment. He had mercury and iodid medication at several periods. The anamnesis and the morphologic aspect of the ulcer made the diagnosis of syphilis almost certain. I submitted the patient to an intravenous sublimate treatment, injecting 12 to 30 drops of the 1 percent solution once a day. After 12 injections the ulcer showed cicatrization from all sides, being reduced to about two-thirds of its former size. From that time potassium iodid was given and the ulcer healed in about six to eight weeks. The patient has now remained free from any relapse for seven months.

A serious drawback to the intravenous sublimate medication appeared also in this case. The injections produce, if only traces of the sublimate solution enter the perivenous tissues, considerable pain and a reactive inflammation which even has led to thrombosis and circumscribed necrosis. It is then hard to find a suitable place for further injections and, as a rule, the treatment has to be discontinued after a odzen or so of injections. As it seems impossible to avoid the entrance, now and then, into the perivenous tissues of a drop of the solution, the inconvenience may be remedied only by the employment of a mercurial preparation which is less irritant to the tissues. This, however, has still to be found.

While in Guatemala, I had a wide oppor-

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*I gave to this patient for two weeks one intravenous injection a day. For the rest of the treatment I used, instead, intramuscular injections. Following Baccelli's routine I used for intravenous administration the formula:

Sublimate	1.0
Sodium chlorid	3.0
Distilled water	100.0

Of this 1% solution I gave ½ to 1 cc. at an injection.

tunity to use quinin intravenously in the treatment of malaria. Sometimes it could not be retained when given by mouth. In cases of urgency, such as malarial coma, and in children, I gave quinin hypodermically. When this gave pain I injected the quinin directly into the blood. By carefully observing the technic I was able to do this painlessly. Although the results were satisfactory they did not seem to me to be more conspicuous than those obtained by oral or hypodermic medication.

After Landerer and Baccelli things came to a standstill for more than ten years. About two years ago a new impetus was given to intravenous therapeutics. So far as I can find out digitalis preparations were first injected.

Digalen, which is the commercial name of Cloetta's soluble digitoxin, was used instead of the old digitalis leaves and their preparations, which are well known to be changeable and unstable and thus unreliable. Professor Cloetta[2] says: "If the medical man is not in a position to know whether he ought to prescribe one gram or four grams of infused folia digitalis in order to attain the desired effect, the situation may well be regarded as precarious." Extracts and tinctures are not much better. They vary in strength in a considerable degree and their effect is therefore very inconstant. In this and other respects digalen is superior to the raw drug as well as to tincture, to digitalin, etc. Digalen when given by mouth is almost free from the lamentable drawbacks of the old digitalis, as well as of its modern modifications and caffein substitutes which irritate the stomach mucosa, spoil the appetite and cause diarrhea. But digalen is still better suited for injections. When injected subcutaneously (best deep into the muscles), it is painful and there is often an inflammatory reaction. Hypodermically it acts quicker than by mouth, but not so quick as in intravenous injections, which are "almost instantaneous" in their effects. Moreover, the latter are painless. We inject 2 cc. to 5 cc. at a dose and repeat, if necessary, on the same day. This dose is reduced the following day and the drug is soon stopped entirely. Please notice this method of giving rather large doses at first and of gradually reducing later, and contrast it with the traditional slow and protracted dosage. The rapid action of digalen *intra venam* makes it possible to reestablish compensation in 48 hours, where we could not expect it, under the old treatment, before a week or so. Digalen does not follow the general rule that intravenous medication demands a smaller dose than oral. While the usual single dose by mouth is 1 cc. (corresponding to $\frac{1}{3}$ mg. of Cloetta's digitoxin or 0.1 gram of digitalis leaves), when used intravenously not less than 2 cc., and even as much as 10 cc. should be employed. Digalen is claimed not to produce any undesirable concomitant symptoms[3] and not to be cumulative in action. It has had extended use, and reports from the most reputable European hospitals and clinics,[4] where it is largely used, are so favorable that we can hardly doubt its merits. I would advocate the intravenous application of digalen in all cases of sudden collapse, due to organic lesions or acute secondary weakness of the heart, as in pneumonia and other acute infectious diseases—in short, when the patient's life hangs, as it were, by a thread, and when everything depends on stimulating the heart for the next few hours. Winckelmann[5] reports brilliant results in several cases of pneumonia with collapse and great heart weakness. But I see no reason for not giving the drug in a more simple way in all ordinary cases. I wish to remark that in this country a similar drug is manufactured and sold under the name "digitalone."[r] I am informed that it is a permanent solution of digitalis equivalent in strength to a 10 percent tincture of digitalis and standardized physiologically. Digitalone is already used abroad instead of digalen. So we have in these preparations a form of digitalis which is permanent, invariable in strength, easily measured for dosage and suitable for any kind of application—certainly very valuable properties.

Another important application of our method is in the therapeutics of arsenic and iron. The subcutaneous injections of Fowler's and Pearson's solution which I used as far back as

11 years ago, are painful. They are also very poisonous. It is therefore necessary to administer them with great precaution and in small doses, frequently repeated. Professor Gautier, of Paris, speaks in glowing terms of cacodylic acid (dimethylarsenic acid) and sodium cacodylate. These sodium salts, in injections, do not cause pain and are nearly innocuous. Unfortunately their solutions undergo decomposition. Cacodylic acid cannot be given by mouth, as the breath would have a garlic odor for a long time, hence its name. Mendel, one of the foremost advocates of intravenous therapeutics, reported, in 1902, intravenous injections of sodium cacodylate.[6] The French manufacturing chemists who are so ingenious in making elegant pharmacopeial preparations, now furnish a stable form of the sodium cacodylate, sterilized, in little glass bulbs containing a single dose of 0.05. It is sold under the trade name "Arsycodile Leprince." Another important form of arsenic is atoxyl. This has been much used during the last three years. It is the anilid of metarsenic acid, a stable body, and while containing a high percentage of arsenic (37.6 percent) it has been proved by animal experimentation to be 40 times less toxic than Fowler's solution. During 1904, I had the opportunity of using it in the Mikulicz private clinic for pseudoleukemia (malignant lymphomas) and inoperable sarcomas. Our applications were made hypodermically. It is only fair to say that in these cases its use was only consolatory, as the cases were too far advanced to allow of hope of recovery. There have been some good results reported, however, by other observers. I made the injections in one case into the very substance of the pseudoleukemic tumors, which as long as the treatment lasted, did not increase in size. The treatment was not carried out very thoroughly, so no conclusions are justifiable. The injections as we practised them (.5 to 1 cc. of the formula: "atoxyl 3.0, distilled water 21.0, glycerin 6.0") are only slightly painful.

As the field for the application of arsenic is very large it may be readily understood how experiences with the new remedies and reports of their application became very numerous. Among other diseases treated by this method may be mentioned—sarcomas, malignant lymphadenomas, pseudoleukemia, splenic enlargement in leukemia, progressive pernicious anemia and secondary anemia, beside hysteria, neurasthenia, chorea; and then malaria, malarial neuralgia, sciatica and other neuralgias and last but not least the large group of chronic diseases of the skin. Exclusive and systematic observations have been made in the Lassar Skin Clinic at Berlin,[7] especially concerning the intravenous application of atoxyl. Twenty to 40 single injections of 0.15 to 0.25 atoxyl constituted a treatment.

Leprince has also contributed to the therapeutics of iron. He placed on the market the "ferricodile Leprince," which is ferruginous arsycodile. It is sold in boxes containing 20 single doses in sealed glass bulbs. Each of 0.05 cacodylate of iron which has 20 percent of pure metallic iron. It has long been a matter of dispute whether or not metallic iron was absorbed by the intestine. Many reputable physiologists have answered this question in the negative and Bunge[8] has come to this conclusion also after experiments on animals. The question has been settled, from the standpoint of therapeutics, at least, by the subcutaneous and intravenous injections.* The ferricodile has been used intravenously only a very short time. It was first used by Erwin Franck,[9] of Berlin, who reports numerous applications with good results.† He recommends its use in all cases in which iron is not tolerated by the stomach, in which there is dyspepsia and diarrhea. He says: "After a short time there was a striking improvement in the subjective condition of the patients. Appetite and complexion improved. Instead of depression, there was elevation of spirits. Weight increased and the red blood cells rose in number. Even when these objective symptoms were not present, the general appearance of the patients was evidently greatly improved, as an effect of the iron treatment. These results and revolutionary changes were not fugitive but lasting!" Franck reports cases of grave neurasthenic anemias in which the patients had been treated in vain in several ways, and who were much improved by a series of 20 injections. He suggests the treatment by this method of all the manifold derangements of nutrition and metabolism which have an underlying anemia. Professor Senator, of Berlin, has used iron and iron-arsenic derivatives internally and by hypodermic injection. However, he does not advocate hypodermic injections of these drugs, as they are painful and are, generally speaking, not superior to the administration by mouth. Only in pernicious anemia, leukemia and pseudoleukemia he uses the ferrum arseniate-citricum ammoniatum and the ferrum cacodylicum for hypodermic injection.

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*The question of assimilation remains open, however.

†I draw and quote largely from the concise and clear, collective report of Erwin Franck in the Zeitschrift f. ärztl. Fortb.

The antiseptics form another group in intravenous therapeutics. It is a fascinating idea which contemplates the introduction into the circulating blood of antiseptic substances with which directly to combat the circulating bacteria or to render the blood an unsuitable culture medium. Lènhartz, Jochmann and others have shown us that in infectious diseases and septic conditions, bacteria often occur in the blood. I convinced myself of this fact at the Hamburg General Hospital in cases of scarlatina.

The best known antiseptic of this sort is collargol. It is a colloidal metallic silver brought before the public in 1897 by Credé,[10] of Dresden. It was first employed as a 15 percent ointment, the socalled "Unguentum Credé." In 1902 an improved preparation, soluble in water, was introduced which is used by Credé himself in a 5 percent solution; 1 to 2 cc. are injected into the vein and, if necessary, this is repeated in five or six days. Collargol is indicated in a variety of septic conditions, particularly in puerperal septicemia for which surprising results are reported. Weissman[11] calls it a specific against septicemia and gives it even as a prophylactic in grave injuries and difficult obstetric operations. While there is some cause to think that we directly affect the germs circulating within the blood by injections of collargol, it can be readily understood why patients with genuine pyemia with multiple metastatic abscesses have not been benefited by the injections. Herrmann[12] of the Heidelberg clinic, reports a striking result in a subacute gonorrheal septicemia. A boy of 14 had a purulent urethral discharge for 10 weeks in which gonococci were demonstrated. For three weeks there had been high fever, pains in the joints, abundant skin eruptions and an endocarditis. His condition was grave. After one intravenous injection of 3 cc. of a 2 percent collargol solution, the high temperature fell to normal and the other symptoms quickly disappeared. The rapid recovery in this case may be due to the fact that gonococci are especially susceptible to silver preparations. It may, however, be said expressly that the opinions of the therapeutic value of collargol are strongly, even diametrically opposed to each other. In fact, from an authoritative source the remedy is declared absolutely worthless and the idea of killing the bacteria in the blood is called a *naive* utopia. By experiments in the laboratory it has recently been demonstrated that collargol has no bactericidal power whatever. Be that as it may, there is one serious drawback in the use of collargol, *i. e.*, the chills and rise of temperature which in many cases follow its intravenal application. In fact, I have noticed this in the majority of my cases; I have seen, in a case of puerperal fever, that an injection of 5 cc. of a 4 percent solution was within 20 minutes followed by a severe shaking chill, a rise of temperature from 99.6° to 106.8° and a pulse of 170 to 180. The patient was brought, in this way, to death's door. I could hardly attribute her final recovery to the collargol. In a case of subacute and chronic polyarthritis of apparently urethral origin which extended over more than six months most of the collargol injections, I made, produced light chills and rise of temperature. These observations which are confirmed by similar reports warn us at least to be very cautious in using large doses of collargol, notwithstanding Credé's recommendation. As to the therapeutic value of the remedy I am so far unable to form any definite opinion. I have frequently used the inunctions of "Unguentum Credé." I have treated several patients with erysipelas in this way and have lost none. The small number of my patients, however, allows of no valuable conclusions. A patient blackened by this ointment does not present a very pleasing appearance. For this reason, too, the injections offer the most advantageous form of collargol medication.

Formaldehyd belongs to the same category. Soon after its discovery it was also used internally, but on account of its toxicity it was given up after repeated trials. Recent investigations,[13] however, have demonstrated that poisonous qualities are not inherent except in impure preparations of formalin and that its caustic effect is very transient and may, indeed, be eliminated by the use of proper compounds. If we administer formalin in chemical combination with certain bodies from which it later slowly and gradually becomes dissociated, it does not irritate the stomach mucosa. Such a compound is formamint, which is composed of formalin, milk, sugar, and menthol. A formamint tablet represents 0.01 of formaldehyd. The use of formaldehyd and its compounds (urotropin, formin) as urinary antiseptics is well known to all. But there are also favorable reports of its use as a general antiseptic in acute febrile conditions, such as angina, diphtheria, erysipelas, etc. It has been proved conclusively that formaldehyd, after oral administration, circulates unchanged in the blood and is, for instance, secreted with the mother's milk.[14] As this is a simple method of administering the drug, I question seriously the necessity for giving it intravenously. It is true that Barrow, for example, secured a recovery in the case of a patient apparently hopelessly septicemic. This took place after only one injection of 700 cc. of a 0.2 per mille formalin solution. It seems, however, that this whole question is still in the experimental stage.

Mendel[15] has advocated the use of two more remedies intravenously, attritin and fibrolysin. The first is a salicylate which is sold in single doses of 2 cc. in sterile tubes, containing about 18 percent sodium salicylate. But we are not confined to these specialties and may well use a solution of a salicylate made up in a reliable drug store. I would, for example, recommend the following formula:

Sodium salicylate	8 0
Sodiosalicylate of caffeine......	2.0
Distilled water................	50.0

Injected once a day 2 cc. as a single dose, intravenously.

Mendel injects a dose of 2 cc. of attritin once or twice daily. In many cases a single dose is claimed to be followed by a recovery! These really marvelous results are certainly much more striking than those of the customary salicylate treatment. This is, however, not the principal reason why I would advocate the intravenous injections of the salicylates. By the intravenous method we obviate entirely the loss of appetite and dyspepsia which almost always accompany an energetic oral treatment with salicylates. In grave cases to obtain any lasting effect by ordinary administration, large doses, given by day and by night, are necessary.[16] Thus the great advantage of giving a single injection a day is at once apparent. The new treatment has made its way in this country, and many reports of its value have been published.

I am well aware, however, that there are some who say that the results are no better than in treatment by mouth, and that relapses are no less frequent; but it is certain that troublesome and alarming by-effects accompanying ordinary salicylate medication are greatly ameliorated. Loss of appetite, sweats, humming in the ears, etc., are much less annoying. In short, subjective feeling and general nutrition are only slightly, or not at all, affected by this method of treatment. Some critics pronounce the method worthless, others superfluous. But what new method in therapeutics has not been similarly criticised! Time settles all such discussions, and if the method has real value it will be generally accepted.*

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*I must state that in several of my cases of acute inflammatory rheumatism the injections of sodii salicylate (8:50 distilled water; 3 cc. once a day) were by far surpassed in efficiency by the same drug when given by mouth in large and frequently repeated doses.

Thiosinamin was the forerunner of fibrolysin and was introduced by H. von Hebra in 1892. It is employed subcutaneously, in indurative and cicatricial processes of all kinds. Hebra injected it at a distance from the cicatricial tissue, so he evidently thought its effect a general one through the blood current. I have only used it in the treatment of keloid and saw little benefit from it. In the Mikulicz clinic I observed its use in several cases of Dupuytren's contraction of the finger, with an excellent result. We employed thiosinamin in a 10 percent solution and injected it locally. For instance, in Dupuytren's disease it was injected into the palmar fascia. You all know how stubborn this disease is and how it cannot always be cured even by a radical extirpation of the palmar fascia. If I remember correctly, two out of three patients treated in this way were cured, one improved. I am, however, unable to say anything about the permanence of the cure. The patients were treated for several months in an ambulatory manner. During this time they were given systematic massage.[17] Whether fibrolysin possesses the same therapeutic properties as thiosinamin or is superior to it or whether, more than all else, its intravenous application is justified merely because it is painless, I am not in a position to say.

The foregoing are the remedies which up to this time have made their way into therapeutics. There is no doubt that their number will grow in the near future. I would like to suggest here, the use of ergot. It is true that ergot holds a rather dubious position in our materia medica. The hemostatic action of this drug in uterine hemorrhage is explained by some on the basis of vasoconstriction, by others as the result of a direct action on the uterine musculature. Numerous strong experimental evidences, however, show that ergot exerts a direct effect on cardiac muscle, that it lowers bloodpressure and that it affects the volume of the organs in the same manner, *i. e.*, contracts the uterus. This effect is, nevertheless, only secured when the ergot is injected directly into the blood, as I shall show at the end of this paper. Intravenous injections have been proved innocuous by experiment.* This and the fact that in postpartum hemorrhages, and in atony of the uterus, the effect desired is a rapid one, make it appear to me a drug eminently well suited to intravenous injections.

In selecting new remedies for intravenous application, misguided enthusiasm or lack of critical inspection of them will likely lead us to proceed incautiously and to overshoot the mark. All possible and impossible remedies will be injected. We will hear not only of ill results but also of accidents. Above all we should bear in mind that for endovenal injection only those drugs are allowable concerning which we have previous knowledge by animal experimentation. They must not be injurious to the blood itself, must not in a chemical or in any other way destroy the blood-corpuscles, precipitate the fibrin or injure the endothelium of the vessels. We know that any injury to the endothelium, be it mechanical or nutritive, is apt to cause coagulation and thrombosis. Indeed, a case of embolism of the lungs and also one of thrombosis of the femoral vein after salicylic injections, are reported. This is also the reason why individuals with a weak heart should not receive injections, except in the case of digitalis. The prejudice against the injections and the opposition to them on the part of the laity are therefore not so entirely devoid of reason. They much prefer to swallow the most repugnant drugs than to have them injected into the blood. In fact, the patient must have great confidence in his doctor and there must be considerable firmness on the physician's part to initiate successfully intravenous injections. The dislike of the patient usually vanishes after the first injection when he sees how harmless the procedure is and how quickly he is benefited. A proper execution of the injection is, however, indispensable for good results. As in subcutaneous injections many drugs cause pain, when by chance, a little of the solution gets into the perivenous tissue or into the wall of the vein itself. The salicylates, thiosynamin, ferricodile, sublimate, are drugs of this kind. In introducing and removing the needle we must guard against this little accident. We must not exert any pressure upon the piston of the syringe before we are sure that the needle point is free within the vein. We may be convinced of it if the needle is freely movable and blood leaks from its proximal end. After emptying the whole syringe we wait for some seconds and then withdraw the instrument with a single quick movement.

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* A stable and physiologically standardized preparation, suitable for injections, is manufactured in this country under the name of "ergone."

With this discussion of the technic, I reach the last part of my task. This is exceedingly important, for upon the adoption and observation of a correct technic will depend whether or not the new method will obtain a firm footing and become the generally recognized procedure of the practitioner. Since the method has been taken up more extensively, sometimes with blind enthusiasm, a certain reaction has already set in. There are some who are not so enthusiastic. This is but natural when we see how many rush to inject the next best drug of the pharmacopeia. "Would it be sensible to inject opium or tannin or nux vomica into the blood in order to cure a gastric or intestinal catarrh?" The dose should not be determined in a reckless manner, thinking perhaps, "much does much good." There is a case reported of total blindness after injection of atoxyl.[18] But how was it done? In the short space of three months nine grams of pure arsenic were injected. No wonder the patient who wished to be rid of a certain skin disease showed by and by all sorts of symptoms of arsenic poisoning until she finally became blind. Three weeks after the last injection was given the laboratory in which the urine and feces were examined still smelled of arsenic, and almost two months after the last injection arsenic was still found in the excretions. *Sit modus in rebus.*

The injections may be made in any visible vein but I would like to recommend as the most suitable one of the classic cubital veins, the vena mediana cephalica or basilica. In thin and muscular individuals, especially in men, they are very conspicuous. If not prominent, we apply a rubber bandage about the elbow-joint, causing the vein to project. This expedient will prove valuable for the beginner but even the most experienced will find it good in cases of children and women who have a well-developed panniculus adiposus and fine, almost invisible vessels. In all other cases the skilful man knows how to shut off the vein by a mere pressure of a finger of the left hand while making at the same time the injection with the right hand. It may sometimes be necessary to make use of a special trick. By repeatedly applying and removing the rubber bandage the extremely tender veins will finally project sufficiently. If the arm is moved energeticallv before the bandage is applied and if the fingers are moved after its application the hyperemia also is increased.

Now as to syringes. Instrument makers have worked with exceptional diligence in making syringes. No other instrument has been so often modified and improved. And still I believe that we have not yet reached the end and found a syringe which is satisfactory in all respects. We are still awaiting the ideal syringe. We first had the hard rubber syringe, then the metal and lastly the all-glass syringe. A most perfect instrument is the all-glass syringe manufactured by Collin, in Paris. This syringe is very expensiv and delicate and a certain skill is required to handle it. For my part, I have no choice as to what material the syringe should be made of, but would only insist that it should be so made as to admit of boiling. The leather piston should certainly be relegated to obscurity. Of course in these aseptic days, we should never see velvet lined cases. The syringe may be sterilized by boiling for two minutes in a test-tube. The canula question is also important. It should be as fine as possible and exceedingly sharp. Old canulas should be discarded. A needle should not be used for months at a time. Even with the greatest care you may have an unsatisfactory point after eight or ten injections. The needles are best kept in absolute alcohol. The care of the syringe and its sterilization is carried out in the following manner. When the injection is finished the little wound is covered with a piece of nonirritating adhesive plaster. Both syringe and needle are immediately cleansed with hot water. A current of air is repeatedly forced through the canula to dry it. This is best done with a little rubber bulb. The poorest method is to use wires. They rust quickly in a moist canula and the canula itself rusts. The needle is best kept hanging in absolute alcohol. The alcohol protects it against rust and dust and by its antiseptic properties always keeps it ready for use. It is also very desirable to use a different syringe for each drug if many different drugs are given. The solution itself, if not used several times on the same day, should be sterilized by boiling before every injection. Half a minute of boiling is sufficient, as certain medicamental solutions are liable to undergo decomposition by frequent and protracted sterilization. The solutions, therefore, should be freshly prepared as often as possible and always in small quantities. The exhibition of these drugs in sterilized single doses put up in little glass bulbs is a valuable innovation. The solution is always sterile, ready for use and of an almost unlimited stability.

An extreme aseptic routine is the first condition, essential to successful intravenous therapeutics. Though but few accidents due to injections are recorded, do not forget that there has never been a predilection for reporting bad results. Be that as it may, the responsibility is always great. The blood is fortunately possessed of great power of defense against infections. The blood always carries protective and germicidal substances or develops them, according to Ehrlich, by contact with the bacteria or their toxins (antitoxins and antibodies) giving to the organism in this way an absolute or relative immunity. Moreover, the blood, constantly in motion, carries away instantly the relatively small quantities of virus and spreads it everywhere, giving it up to phagocytosis and chemical annihilation. There is some resemblance between this and the peritoneum. In both the defensive power is overcome by a too abundant or too malignant infection. From this point of view, the great power of self-protection possessed by the living blood makes, it may be said, an intravenous injection even less dangerous than the common hypodermic injection. Here we have the danger of lymphatic infection with all its grave consequences. The lymph has but little bactericidal power and is a slowly flowing stream.

One more word as to technic. I have already said that to avoid causing pain we should not bring the solution in contact with the tissues. Sometimes a drop of the solution hangs from the point of the needle. We should wipe it off with a bit of cotton before making the injection. In order to avoid stagnation and consequent swelling we should best make the injection as slowly as possible and loosen the constricting bandage at the moment the injection is made. Franck also calls our attention to the valves of the veins. In laborers they usually hypertrophy and form nodes.

We have to avoid these nodes with our needle; should its point become entangled, swelling and pain may result. I am sure you will understand from what I have said, that the technic of intravenous injections is not exactly simple, and requires practice. If this view of the matter is not taken, this method will have the same fate as that of one of the most wonderful technical discoveries. I refer to Schleich's infiltration anesthesia, which is most valuable to the general practitioner and to the surgeon as well. When, in 1894, I learned the method from Schleich himself, I at once understood why it was sure to become most valuable in minor surgery. But this method did not meet the universal reception it merited. Why? Because so many of our profession did not take pains to master the technic thoroughly or else they considered it to be as simple as any hypodermic injection. So the method was dropped, and instead of blaming themselves, the method was blamed. I leave out of the discussion the question whether or not the technic of intravenous injections should be taught in the medical schools, as advocated by Franck, or in postgraduate courses or only by private instruction. There is no doubt the new technic will best spread and find new disciples "by personal communication, by tradition, from hand to hand, from mouth to mouth." If necessary, the technic may be practised on a rabbit.

However, the somewhat complex technic will be a sort of impediment to the method and its general adoption. This is one reason why I should hesitate to share Mendel's enthusiasm. His declaration that intravenous method is the "therapy of the future" is hyperbolic. Many will say, too, "we have always got along very well without that." No doubt! And in most cases we would get along without it in the future, as almost all of the remedies are suitable for oral medication. But no doubt, too, there are cases in which we can do more good for our patients with injections than by ordinary treatment. We need not discuss again all the advantages of intravenous medication. "Therapeutic agents, the union of which, with the formed elements of the blood directly, desired will act intravenously with great intensity in very small, almost homeopathic, doses. . . . I regard, however, as the main advantage, the sparing of the digestive organs in the use of iron, arsenic, and the salicylates, notably in chlorotics and rheumatics." It is, therefore, not dazzling results which engage many in favor of the new method. And yet there can be no doubt that in the case of quite a number of remedies the activity and promptness of absorption and assimilation and therefore of therapeutic effects, depend upon the mode and place of application. We know that from exact experimental work. Meltzer and Auer[19] have shown that absorption is much more active from intramuscular than from subcutaneous injections. Again, Sollmann and Brown,[20] in their valuable experimental studies on the physiologic effects of ergot, found this drug of service only when given in intravenous injections. "We intended to use the drug by intramuscular injection," they say. "The results were so meager that the investigation seemed unpromising. We changed, therefore, to the study of the effects of intravenous injections. The typical effects of the intravenous injections of ergot consist in a considerable, abrupt fall in bloodpressure followed by a prompt return to normal and generally a slight and short rise. The preliminary fall in bloodpressure is absent if the ergot is given by intramuscular injection." We thus see that the symptoms produced vary both in kind and degree, and that the therapeutic phenomena characterizing intravenous injections are not always the same as those produced by hypodermic injections. These are, indeed, very important facts!

While we do well in formulating our conclusions with caution and conservatism we may say that this method opens up a new field in therapeutics and many new possibilities. We may be sure that the chaff will be separated from the wheat. Or, using another metaphor, we may say. The whirlwind of sound criticism and experience will rush in and to the few surviving remedies we may apply Vergil's words;

"Rari nantes in gurgite vasto."

CONCLUSIONS.

1. Especially fitted for intravenous treatment are "dyscrasic" and dystrophic affections, disorders of metabolism, blood diseases, septic infections, cardiac insufficiency, syphilis.

2. Cinnamylic acid, quinin, sublimate, salicylates, the derivatives of digitalis, fibrolysin, arsenic and iron, collargol and formalin are the drugs so far used.

3. The advantages of the method are: (a) Avoidance of digestive and other troubles or by-effects, (b) exact dosification, (c) administration at greater intervals of time, (d) a more direct and therefore a more rapid action. (e) a more energetic effect, (f) relative painlessness when compared with hypodermic injections.

4. The technic is not easy. It has to be learned and carefully observed.

5. I believe that intravenous medication is exceedingly valuable in many conditions. While I am sure that it will have a certain future, I am no less sure that the oral administration of drugs will always remain the standard procedure for every day.

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SENILITY.[1]

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The fact of growing old, of passing from infancy to childhood, from childhood to adolescence, from adolescence to early maturity, to more or less frankly admitted middle life, from middle life to the state euphemistically called "elderly," and from this to undeniable old age, is one that constantly puzzles every thinking human being and that suggests all sorts of meditations, introspective and objective, religious, social and scientific.

Not to discuss growing old from a religious standpoint or even to contemplate it with morbid introspection, it may not be out of place to consider briefly, intellectual maturation and senility in their bearing upon the social relations of the individual. It has sometimes seemed to me that each individual is, so to speak, set to strike his optimum at a given period of life. All of us can recall ideal boys and girls who never have matured into full manhood or womanhood. Then there are others who, as boys and girls, were ill at ease, unpopular and unpromising, who became in early adult life powers for good among their pupils; who have won the respect and affection of patients; who have become leaders of other men and women. But, as age advances, very likely we find these same men and women unable to maintain the same relative hold upon their pupils, patients, employes or adherents and compelled to seek new devotees among the rising generation.

Conversely, persons who have gone inconspicuously through four or five decades of life, gradually strike their level and become influential among their colleagues and juniors, in a social if not a public sense, during the autumn of life.

A shrewd druggist placed a platform scale in his store and hung on the wall behind it advertisements of antifat and antilean nostrums. He explained that, so long as a person's weight was unknown to himself and his friends, it would usually give him no trouble but, just so soon as the exact weight was known, it would seem deficient or excessive in a large number of cases and a demand would be created for one or other of the nostrums. Often, of two persons of the same weight and height, one would call for antifat, the other for antilean. So, too, it often seems that when we tell our exact age, we become too young to suit some of our friends and too old for others.

The different rates at which different individuals mature is a phenomenon worthy of scientific study. At 22, I had a roommate, aged 47, to whom I acted as mentor not only in regard to his studies but in regard to his moral conduct. Conversely, one of my school friends, two months younger than myself, was as a boy too mature in his mental development ever to be a playmate of his friends of equal age and, today, only personal recollection or documentary evidence would convince anyone that he was not 15 years my senior. In neither of these cases is allusion made to maturation under stress of hardship and grief, or to senility or maturation as evinced by gray hairs, baldness or physical infirmity, but to mental maturation pure and simple. Indeed, while the whitening or loss of hair, the development of the beard, the formation of wrinkles in the face, the hardening of arteries, the development of the arcus senilis, etc., are indications of age, we recognize individuals as mature or immature, as young or old, quite independently of any or all of these changes, until, quite late in life, purely physical health or infirmity may mislead us to add or subtract 10 or 20 years to or from the true age of the individual.

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[1] Presented to the American Academy of Medicine, at Boston, June, 1906.

Neither does mental achievement or practical judgment determine our estimate of maturity or senility. We need not go beyond our personal knowledge of our own profession to realize that some of our colleagues whom we consider as fully mature at 30 or senile at any age from 50 on, are not so considered because they have ever accomplished anything noteworthy in scientific or clinical study and, on the other hand, many of the most important advances have been made by "kids" and many of our leading physicians and surgeons are boyish at middle life and always will remain so. It is unnecessary to state that such observations apply to other lines of professional and business activity. Indeed, it seems that great attainments in any scientific vocation can be made only by those who throw themselves into their lifework with the same abandon, enthusiasm, forgetfulness of other interests and disregard of the future, with which boys enter into a game. The leisurely, dignified, self-controlled, grown-up manner of doing things, may be well adapted to making money or to carrying on certain phases of professional work, but it is not conducive to original discoveries as to birds and mammals, germs, or even the functions of the body in disease and health or the behavior of the chemic elements singly and in combination. If the kingdom of Heaven is opened only to those who become as little children, the innermost realms of science are reached only by the tireless feet of those who can run and climb as boys.

Often, we note the paradox of a middle life of play or even dissipation, following upon a serious minded youth. The individual so far as his mentality is concerned, seems really to have grown younger instead of older. To some degree, this paradox is explained by the more or less real need of appearing mature in order to secure or to hold a position of responsibility. Conversely, with increasing years, a superabundance of physical strength or of juvenility is affected in order to controvert the anticipated accusation of senility. Thus, the young man grows a beard, the veteran shaves his face and dyes his whitening locks, from sordid motives. Again, youth imitates age and age youth, simply as an expression of the innate desire for that which we do not possess, on precisely the same principle that the successful surgeon would give up his career to be able to influence men's thoughts by the magic of his voice in oratory or that the statesman would relinquish his if he could write such a story as Kipling.

But, quite aside from such reasons, the assumption of youthful habits late in life is very often due solely to the fact that leisure or actual financial ability was lacking at the period when sports and social enjoyment are considered appropriate. In other words, the boy has been compelled to be father to the man of pleasure and to provide the means for youthful pastimes, for himself as well as, or instead of for his own sons. Even when there has been no actual lack of financial means for self-gratification a wholesome ambition has led the youth to immerse himself in serious duties from which he emerges in the Indian summer of life with the feeling that he has earned the right to relaxation and, indeed, with the realization that, either to lengthen or to broaden his life, he must have the experiences of youth.

It is commonly stated that a happy, youthful disposition can be, to some degree, achieved by sheer force of will and that, whether a natural gift or an acquisition, such a disposition conduces to health and longevity. While granting that it is a blessing and a comfort to feel and to act young and, certainly, that too close application to serious duties impairs the health and shortens life, I am personally skeptic as to whether the boyish man or girlish woman enjoys better physical health, postpones senile changes longer or actually lives longer than the individual who is sedate and mature. And it certainly must be admitted that the man who overtaxes his physical strength in playing ball or the woman who dances and plays golf after arterial and visceral lesions have set in, purchases a prolonged youth at the expense of a shortened life.

Although denying the claim that mental juvenility has a hygienic value in preventing senile physical changes and in prolonging life, it must be admitted that stress of circumstances may and usually do, age both mind and body, also, that the purely physical changes of senility render many of the expressions of juvenility impossible and, in addition, react by suggestion upon the mind so as really to make the individual "feel old."

One of the most marvelous phenomena of life and one that grows less marvelous and less mysterious only because of custom and not from any progress toward explanation, is the different rates at which maturity and senility advance. Compare a puppy and a baby born the same day. Almost by the time that the baby is weaned, the puppy has reached sexual maturity and full growth. He is middle aged and sedate before the child can be trusted to look after its most primitive needs or can be regarded as a rational, though immature individual. When the child reaches puberty, the dog is dying of old age, not, indeed at a record breaking age but still at one far beyond the average. The equine animals quite often live to be 25 or even 30 and whales and various other large animals are said to have a considerable longevity. Turtles are occasionally found with ancient dates carved in their shells, but, in many instances, these dates are fictitious. Of the animals with which man is at all closely associated, elephants, camels, parrots, eagles, swans, ravens and some fish notably carp, are almost the only ones which equal or exceed his own longevity. It may be said in parenthesis that, contrary to the prevailing pessimistic opinion, man not only exceeds most of the rest of the animal kingdom in longevity but in resistance to causes of disease in general and to specific disease germs in particular.

On a lesser scale, we note variations in human maturation and senility quite comparable to those of the animal kingdom in general and even more striking on account of our closer relations with our own kind. At one extreme, we have the cretin who lives, not a long life but still frequently one of 20 to 30 years, without getting beyond the appearance of late infancy. At the other extreme, we have the still rarer phenomenon of geromorphism, in which precocious development culminates in all the superficial attributes of old age before the normal individual would have reached his majority.

These extreme types are rare and distinctly pathologic. Less striking and yet of more real interest are the variations of physical and mental maturation and senility, which are encountered in everyday life. Of paramount importance from its indirect influence upon social and ethical and ultimately upon economic and criminal conditions, is the disparity in the maturation of the two sexes. Although there are well-known differences in the time of puberty, according to race and climate, not to mention individual variations, it is generally true that somewhere between the ages of 12 and 16, girls are quite suddenly set two or three years ahead of the boys who have hitherto been their companions. Personally, I am rather skeptic as to the truth of the prevailing opinion that American girls usually begin to menstruate at 12 or 13 and that the local signs of puberty appear much before the age at which they are noted in boys. Still, so far as general mental and physical maturation are concerned, there certainly is a marked and quite sudden disruption of childish companionships due to the different rate of maturation of the two sexes. At some time after majority, the average greater physical and mental occupation of men tends to restore the equilibrium and, notwithstanding the slurs of certain writers of fiction and social critics that a woman of 26, marrying a man of her own age is "robbing the cradle," it seems to me that there is a period of, say 15 years, in early adult life in which mental and physical maturation is independent of sex, and independent of actual age, within a limit of say five years, excepting for numerous individual variations, which are as likely to be in favor of the woman as of the man. After the menopause, there occurs quite suddenly an even greater advancement of the woman beyond the man than occurred at puberty. But, I would offer the same criticism as before, namely that the actual sexual change at the menopause does not occur so early as is commonly thought and that it is of secondary importance as compared with mental and general physical changes toward senility. In spite of certain recondite attempts to establish a climacteric for men, as well as women, the cold, practical fact remains, that there is no definite period of cessation of reproductive power or even of sexual function in the male sex. In a surprising number of cases, the sexual function is maintained to the last. A patient of mine, aged 73, exercised this function more frequently than the average man of 30, he told me of the death of one of his friends, a distinguished judge, during its exercise and prophesied the same end for himself. We may point to one of the Presidents of the United States as an example not only of fecundity but of active sexual function maintained until late in life, and, while it is by no means true that the majority of old men prolong their sexual activity unduly and in an unseemly way, it is a matter of common observation that there is absolutely no such thing as a male climacteric.

While women become senile more rapidly than men, their method of life is such that they are very largely protected from those causes of death which are theoretically avoidable but which inevitably carry off a great number of men after 50. Thus, as a rule, elderly widows greatly exceed widowers. On the principle that there is more sown of the better crop, female births are somewhat in excess of male and the female population remains somewhat in advance of the male till about the age of 29, when equality is nearly absolute, there being 1,731 males to 1,750 females in each 100,000 of population. From this age to that of 58, the males exceed the females, the curves of number receding from and then approaching each other. At 58, there were, in 1900, 521 males and 524 females and at 59, 502 males and 499 females, for each 100,000 of population. From this point on, there is a nearly absolute equality with only insignificant fluctuations, till 75, when the females show a decided though slight preponderance. After the ninty-fifth year, women outnumber men nearly by 2 to 1.

It is obvious that the physical differences of maturation of the two sexes have a very important bearing upon marriage, which is not only a matter of sentimental interest of transcendent degree, but the foundation of society. That first love is usually abortive, is readily explained by the sudden advancement of a boy's female companions at the incipience of the truly sexual attraction between the sexes. At 25, he may have quite caught up with his original sweetheart but he is not likely to have forgotten that for several years, she was too mature for him, even if she has not already married one of the older set. But there is no obvious obstacle to his marrying another girl of his own age or even a little older. Indeed, a few years make very little difference in social affairs and unless a man has waited till fairly late in life and has married a woman considerably younger, say ten years, a very serious problem confronts the pair at about 40, when a comparatively young man finds that his wife has, as if by magic, been changed to a woman ten years his senior. Even disregarding the immediate personal relationship of the pair, which may remain entirely harmonious, many forms of social diversion become practically closed to the wife although the husband is still welcome. One would scarcely like to go so far as to say that nature has interposed a protest against monogamic marriage and, still, we must frankly admit that the unequal rate of maturation of the sexes is a prolific cause of domestic infelicity, of divorce and its attendant evils and the fact that these results are comparatively rare, is, in itself, a eulogy of civilized humanity and of the male sex in particular.

If we regard senility from the purely objective standpoint, I would hazard the definition that it consists in the encroachment of connective tissue upon parenchyma, of calcium phosphate and certain other inorganic salts upon connective tissues and of irregular regeneration of epithelium. It is surprising how narrowly we may limit the definition in this way and how closely together diseases approach, which, at first thought, are widely dissimilar. For example, cerebral apoplexy, arteriosclerosis, chronic Bright's disease, various senile cardiac diseases, not to mention the purely secondary dropsies, hepatic sclerosis, diabetes of the elderly—not the fulminant diabetes of the young, which is probably often a purely functional disturbance through the sympathetic nerves—are all really the same disease differing only because of accident of location. So, too, a calcified plaque in the mitral valve or the arch of the aorta, or a brittle coronary artery which allows the old man to die, literally, of a broken heart, is quite in analogy with a hard brittle bone that fractures easily from a fall that would do a young man no harm or even with the obliteration of the sutures of the skull which has no influence whatever upon the duration of life. Even the chronic bronchitis and bronchopneumonia so prevalent in the old, perhaps even an increased susceptibility to pneumococcic pneumonia, is essentially due to vascular changes in the lungs. Considering the epithelial side of senility, the facts that the old man secretes less hydrochloric acid than the young, that he is more disposed to certain forms of eczema, that erysipelas streptococci penetrate his skin more easily than they do the elastic skin of the young, are, in all probability, closely related to the fact that cancer is almost entirely a disease of the relatively old. Indeed, cancer occurs at the beginning of senility in the majority of cases, in other words, at just the period when we should expect a stormy, irregular activity of growth and before the cessation of regenerative power.

We must not allow similarities of nomenclature and of location and gross symptoms to confuse us. In the young, we note a tendency to malignant activity on the part of connective tissues—sarcoma—which must not be confused with cancer but which may bear the same relation to the senile alteration of mesoblastic cells resulting in fibrosis that the irregular proliferation of epithelium into cancer does to its strictly senile decadence. A contrast has already been drawn between diabetes in the young and in the old. In the former, it is either a functional disturbance or due to some acute pathologic process in the islands of Langerhans, in the latter, it is more strictly an interstitial process and, indeed, it is altogether probable that many mild cases of glycosuria, miscalled diabetes, in the aged, are due rather to the same interference with the glycogenic function of the liver, than to an interference with the internal secretion of the pancreas. So, too, the exophthalmic goiter of the girl of 16 is probably quite different pathologically from the same disease occurring at the menopause. Rheumatism of the young is usually a specific infection, rheumatism of the old is, on the other hand, usually due to metabolic toxins and it is quite likely that no essential difference exists between senile rheumatism and gout. Apoplexy in the comparatively young, say at 35, is notoriously suggestive of syphilis which produces a vascular lesion decidedly different from that of senile fibrosis. Other examples will readily occur to you, of the difference between diseases of the same or similar nomenclature, in the old and in the young.

There remain numerous problems regarding senility which are as yet unanswered. For instance, does a man or animal ever, strictly speaking, die of old age? This question is more difficult than at first sight appears. In most instances in which death is ascribed to old age, some intercurrent affection exists, yet, if the disease, as bronchitis, obstipation, etc., is, in itself, of slight moment and practically incapable of causing death in a younger person, it is really quite as accurate to charge the death to senility as to the intercurrent disease. In other instances, death in the very aged may occur from some emotion, chilling, fatigue, etc., or some condition intermediate between psychic and nervous and organic, as for example distention of the stomach with gas, due to a transient indigestion. In these conditions, too, death is due rather to the underlying weakness of senility than to the trifling exciting cause which latter might and would be replaced by some similar occurrence if the particular cause of death could have been averted. The necropsy does not always help us in assigning a cause for death for, at practically every examination of a cadaver, we find something wrong, and even serious lesions are not necessarily the immediate causes of death and often indeed, they are obviously not thus operative. In a sense, even an exaggerated fibrosis, calcification, disturbance of epithelial integrity is part of the senile change, so that an old man, peacefully dying during sleep of a ruptured artery or gradually succumbing to the toxemia of a contracted kidney or liver may be said to die of old age. At the same time, "old age" is unsatisfactory in a death certificate and is often used when the age given is too little removed from our own, to be comfortable. Again, as has been seen, old age sufficient to warrant the thought of death from an otherwise inadequate and trivial cause, is reached by different individuals after a very different number of years of life.

Another question that arises in this connection is whether a given degree of senility in man or animal corresponds to a given degree of histologic change. This question is, itself, inevitably faulty because, in the first place, we cannot measure senility in terms of so much whitening of the hair, wrinkling of the face, quavering of the voice, etc., nor in the second place, can we suppose the calcificatory and interstitial changes to be symmetrically disposed in all bodies. Nevertheless, in general terms, we may ask whether a man who, at 60, corresponds to our conception of a man of 80, really has the tissues of a man of the latter age. Still more important, does the average dog of 15 or the average horse of 25 or 30, have the osseous and fibrous changes of a man of 80? Off hand, these seem easy questions to answer but, on inquiry of several veterinarians, including some holding positions of prominence in colleges and government bureaus, I am unable to get the desired information. That the bones of the short-lived animals ossify more quickly and more thoroughly than ours do in the same number of years, seems well established. So, too, the toughness of the flesh of old animals used as food, is doubtless due to an increase of connective tissues. But there seems to have been no accurate scientific study along these lines nor as to whether cancer of the lower animals bears the same proportionate relation to age, as in the human being. Such study would be of great value, not only theoretically but practically, as we cannot hope to increase longevity nor alleviate the infirmities of age until we have a clear conception of what we are grappling with.

Another question regarding senility also, at first thought, seems purely speculative, but really has an ultimate practical bearing: Are the changes commonly regarded as senile inseparably connected with the duration of life, although, as has been seen, progressing at unequal rates in different individuals, or are they merely due to the accumulation of effects from adventitious causes encountered during life? This question may be taken either as applying to mental or to physical senility, and, obviously, we may also include maturity. In this broad sense, the question has many practically useful corollaries. For instance, limiting ourselves to mental maturity. we may recur to a matter discussed by the American Academy in 1897–1898: The educational demands of the time are encroaching too much upon the period of active, productive existence. It is possible, without too great intellectual strain or deprivation of leisure, to put a bright boy through the grammar school by the time he is 12, instead of 14 or 15 as at present. Would the four years from 12 to 16 spent in high school yield as much to him as the four from 15 to 19? The same question may be asked with reference to college and professional courses. Again, we may ask why the average man of 25 has better judgment than the average man of 20? Is it simply because he has learned more lessons in the rough school of life or simply because he is 25 instead of 20, or do both factors operate? Is individual difference of maturity and judgment to be similarly explained and is there the added factor of hereditary mental accretion? Does the average intellect become inelastic at about

40 simply because of the exhaustion of a stored energy, or because of purely physical deterioration of the brain; can we prolong its period of elasticity by rest or, on the other hand, by increasing the tension? Similar questions may be asked regarding the actual senile state, with regard to sexual maturation and decadence, etc.

Limiting ourselves to the physical side of the question, we encounter numerous corollaries. For instance, why is immature flesh unwholesome as an article of diet? Every one knows that veal is unwholesome but I have never found a sanitarian who could tell me why, except by allusion to the tendency to bacterial decomposition in young flesh, which seems to be doubtful and which is beside the mark. I have only recently learned that veal becomes beef, not at any special age, but when the calf ceases to live on milk.

Can we hasten maturation by employing a diet rich in lime and in such other ingredients as may be demonstrated to preponderate in adult tissues. Per contra, can we delay senile calcification by a practically lime-free diet or by facilitating the precipitation of lime in the alimentary canal or its solution from the fixed tissues? I need not remind you that it is extremely difficult to obtain lime-free food and, yet, if senile calcification could be thus delayed, almost any trouble and expense would be worth while.

Is the interstitial change of old age closely analogous to the development of scar tissue, by repeated minute insults to the cells? Is the old man's liver or kidney in essentially the same sclerotic state as that which we recognize as hepatic sclerosis or interstitial nephritis? If not, just what is the difference, as to morbid anatomy and etiology? If so, may we not generalize to the extent of declaring that senility is nothing but a slow form of various interstitial inflammations, due theoretically to avoidable toxins, changes of temperature, etc. And, may we not even hope to avoid alcohol, indol, due to gastroenteric bacterial activity, arsenic, formaldehyd, salt peter, excessive quantities of common salt, exposure to cold and damp and out and out infections, to such a degree as really to postpone death from senility?

If, as seems probable at present, cancer is not due to a germ excepting in the sense that its own cells are germs of infection, can we not discover some morphic or functional state of the epithelium which causes this terrible disease? Or can we not, at least avoid the irritations that seem to account for at least some cancers?

It has frequently been pointed out that the natural life of an animal is about five times the developing period and that man ought to live to be about 100 years old. Yet from the earliest historic statements, barring some as in the Bible, which may be regarded as legendary or due to changes of numeric values of letters or to confusion of years with other divisions of time, the ordinary maximum of human life has been observed to be about 70 or 80. It is extremely doubtful if this duration can be prolonged by any attention to hygienic detail, excepting the ordinary means of caring for the feeble and aged. Actual observation of the very old does not warrant the belief that any particular diet or abstention consistently carried out will have any great effect in regard to longevity and a surprisingly large number of the very aged have indulged in various vices of diet and habit which should theoretically have brought them to an early grave. As stated, the mere maintenance of mental juvenility does not have any measurable effect in prolonging life and may actually shorten it. Heredity has some influence upon longevity but whence the original tendency to long life was derived, does not appear. The pursuit of an elaborately simple life, on the order of oatmeal, lukewarm water and retiring at 9 o'clock, does not promise much for longevity and, if it did, would commend itself to very few persons.

The Health of Panama.—The Isthmian Canal Commission has received from Colonel W. C. Gorgas, the chief sanitary officer on the zone, a report that not one American has died in the canal zone from disease during the last three months. The decrease in the deathrate among the employes is due almost entirely to the decrease in pneumonia. In October the deaths among the canal employes included 86 negroes and two whites.

SOME OF THE DISADVANTAGES OF THE UPRIGHT POSITION.[1]

BY
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Not many years ago the doctrine of evolution began to spread in spite of all the efforts of our theologic brethren. The acknowledgment of these very men, at the present time, of the theories they combated merely illustrates their past ignorance in things scientific and how much they have advanced. There is no warfare between science and religion as the misleading title of Andrew D. White's book would lead one to suppose. Grant that evolution is genesis and discussion ceases.

"The anatomist" is practically synonymous with "the skeptic" in popular belief. He dares to question his alleged perfections; he alludes to the reversion toward lower forms of life; and is so far devoid of finer feeling that he will openly and unblushingly criticize the structure of his own body. I have been accused personally by some intensely religious people of "going to great lengths to disprove the Bible" and in answer I may say that there is probably no passage in the Bible but bears several interpretations. My version of the line "in the image of God created He him" is that Man realizes in himself the highest animal form, and cannot conceive of a being more perfect than he is. Viewed in this light a discussion of the disadvantages of the upright position in no way antagonizes the passage quoted.

From a comparative anatomy standpoint, Man excels the animals in few things; first, in the relative ratio of grey to white matter and to body-weight (the major factor of superiority); second, in two other particulars, and they may appeal to you as humorous, the dexterity of the hands, and the ability to sustain convergence of the eyes (to look crosseyed); and third, the maintenance of the upright position. Rob Man of these three points of superiority and he is no better off than the monkey, and if anything, worse off.

Lack of adaptation to environment, a phrase that is a Godsend to the scientist, is merely a graceful acknowledgment of partial ignorance. Whatever the intrinsic or extrinsic factors may have been which prompted our primitive and remote ancestor to abandon the all-four position, this much is true—that despite the millions of years he has spent in readjusting his structure to this self-imposed and unnatural (let us say) posture, it has been far from complete and will probably always be imperfect for reasons I do not care to go into in this discussion.

Let me review briefly, and somewhat systematically, the various points of disadvantage which have occurred to me in a rather hasty study of the various systems of the body. There is no article, to my knowledge, written on this subject, and I trust my colleagues will help me out should I omit important structures. The systems are considered in the following order:—Skeletal, articular, muscular, respiratory, alimentary, vascular, urinary and genital. Naturally the consideration is far from detailed and far from complete.

Skeletal System.—In the upright position, the support of the front legs is lost and the entire weight thrown upon the hind legs. Man reverses, therefore, the primitive function of the upper extremity, and supports it. Naturally, the strength and weight of the lower extremity, pelvic girdle, and vertebral column increases. This, when combined with several other factors, constitutes a serious inconvenience as I hope to show later. The weight of the trunk, upper extremities, and head is transmitted to a dorsally curved sacrum, which curve must be compensated by the secondary lumbar curve directed ventrally. The lumbar curve in turn encroaches on the already hampered abdominal viscera. The persistence of the angle between the shaft and the head of the femur, apart from mechanical inconvenience, tends to the practically incurable fracture at this location in the aged.

The transmission of the weight through the pelvis is met by thickening the bones of the already narrow birth canal. The short interval between the ischial tuberosities indicates that they were never intended for support in the sitting position and accounts for the discomfort, particularly in the male, when seated. That is why we like to get our feet upon the table—the support of the small of the back takes some of the weight off the tuberosities and a third point of bony contact is gained—the end of the sacrum. In standing, the feet are rotated to the ridiculous "ten minutes of two" and the weight of the body thrown upon the weakest portion of the foot arch.

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[1] Read before a joint meeting of the Owen and Monroe Medical Societies, at Ellertsville, Indiana.

The angle between the ulna and humerus, popularly known as the "carrying angle," is merely a persistence of the arrangement in the animal to bring the weight parallel to the weight line, and while the similar angle at the knee is disadvantageous (bow-legs and knock-knees,) the one in the upper extremity is accidentally a decided convenience.

When Man rose upon his hind legs, he lost the ligamentous support of the head—the ligamentum nuchæ—which stills extends between the cervical spines and the external occipital protuberance but is rudimentary and useless. Had the head been designed intentionally, the occipito atlas articulation would never have been placed with its midpoint on a line drawn through the front of the mastoid processes but would have had a more ventral position—roughly a centimeter or two farther to the front.

Articular System.—The extremities of the four-footed forms are directed in general at right angles to the vertebral column, and the articulations are relatively half way between the extremes of flexion and extension—a proper condition, anatomically speaking. In the human being with practically the same articular surfaces, the extremities are placed parallel to the trunk, and in the case of the two upper joints of either extremity—almost completely extended. The discomfort and disadvantage of this lack of adaptation is negatively illustrated in synovitis of these joints when the member tends to a more comfortable position—returns to the animal normal and flexes. Especially well marked in the hip and knee—two joints most subject to this difficulty because of the imposed work in the upright position and gravity.

The tendency, through faulty position, to break down the arch of the foot, is counteracted by making the supporting ligaments stronger, and developing enormously the plantar fascia. However, were Man built to stand upon his hind legs from the start, the tarsal and metatarsal bones would never have been arched with their articular surfaces parallel to the forces acting upon them. The importance of flat-footedness is hardly ever appreciated by the general practitioner.

The sacroiliac articulation in the animal is a relatively movable joint when compared with the practically immovable diarthrosis of the human being. The partial ankylosis of this joint and of the symphysis pubes is due to the transmission of the weight through the pelvis and the disadvantage is evident to every obstetrician. That the function of some joints is almost if not entirely lost in Man is illustrated in the disappearance of the articulation between the second and third phalanges of the little toe. This was attributed by some to the wearing of shoes and was believed by many until the bubble was pricked by finding it in the Egyptian mummy. An example of how long the upright position must have been established and a reassurance to those who believe that the little toe will disappear soon.

We have already noted that the weight is well in front of the support in the head, and that the animal function of the ligamentum nuchæ is lost. In the development of the upright position the mobility of the neck was lost to some extent and a rotation joint formed between the first and second cervical vertebras. The heavy head must now be balanced upon the atlas (control of the nodding movement) and a coordination with the rotation muscles developed. A process far more complicated than in the animal.

The accentuation of many of the disadvantages of the upright position is manifested in faulty development of the bones and joints, as for example, rickets, and by diseases such as osteomalacia, tuberculosis, and rheumatism. With these few words on the major defects of the skeletal and articular systems, we will go on to the still more evident disadvantages found in other organs.

Muscular System.—It is a fact that those things last acquired are first lost—illustrated in that the baby walks before it talks and that the drunkard loses speech before he assumes the animal posture. The effort to assume the upright position is an unconscious one with adult Man but it is no small undertaking for the infant. In some diseases the effort is evident as in pseudomuscular hypertrophy in which the child climbs up its own legs. I call your attention to the fact that the large buttocks (gluteus maximus) is characteristic of the genus *Homo sapiens*.

That the usual head position is maintained through muscular effort and not ligamentous support, is well illustrated when we are tired—the head drops until the chin rests on the chest—or when our attention is directed above the horizontal—the neckache of the sight-seer.

Apart from the dexterity of the hand, the ability to sustain a convergence of the eyes was considered one great point of superiority over the animals. Eye movements are either congenital or acquired—the acquired movement is an incoordination and results in convergence. Anatomically, the eye is a distance organ and the eye muscles are not advantageously placed to carry on the convergence.[1] Furthermore, because Man assumed the upright position he found it necessary to roll the eyes down to the horizontal by action of the rectus inferior. The tendency for the eyes to roll up is well shown in shock, anesthesia, or after death.

Passing to the trunk—note that in costal respiration the entire thoracic wall must be lifted against gravity. Also the use of the upper extremities in carrying (found almost exclusively in Man) necessitates the fixation of the upper ribs through contraction of the muscles connecting the upper extremity and shoulder girdle with the chest wall. This fact in a way accounts for the abdominal type of respiration in the male and illustrates the poor adaptation for carrying—interference with respiration and the build of the shoulder-joint where resistance to traction is counteracted by muscular and not bony support.

That the ventral abdominal wall is not well adapted to the change in position from the all-four to the upright is evident in that it is weakest below, where in reality the greatest strength is needed. In addition, the abdominal muscles in Man are a factor in the balancing of the upright position, a traction that not only makes costal respiration the more difficult but flattens the abdomen and crowds the abdominal viscera against the ventral lumbar curve. The flat abdomen is quite characteristic of Man. In the male especially, where the abdominal wall is really weakened by the descent of the testicle, the poorly attached gut tends to crowd against the inguinal region and results in inguinal hernia. In the female this portion of the abdominal wall is stronger and the hernia tends to come out below Poupart's ligament. Both varieties of rupture are practically unknown in animals. No one will deny that the external genitals of the male are in an anomalously awkward position that may be overcome by resisting gravity with a suspensory.

The disadvantage of atrophy through disuse is evident to all except perhaps they prefer the light meat of the chicken to the dark. The atrophied condition of the intrinsic foot muscles is not paralleled in any five-toed four-footed animal. The arch of the foot has already merited attention. Should the individual be flat-footed, he experiences further discomfort in that the tibialis anticus and posticus go into a tonic spasm to assist in the support of the arch. I know personally a young man who was treated in a sanatorium for rheumatism when in reality he had the leg ache resulting from overtaxed muscles. Nature tries still further to overcome flat-foot by contracting the flexor of the toes and as flexors are always opposed by extensors, we often find on the weaker side of the foot the toes markedly extended between the first phalanx and the metatarsal, and flexed at the next joint—a condition that is well named "the hammer toe."

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[1] A. G. Pohlman, Etiology of Eyestrain, Jr. Am. Med. Assoc., May 6, 1905.

Respiratory System.—There are evident and not unimportant reasons why the respiratory tract suffers in the upright position. We are taught by physiologists that a well expanded lung is a desirable member of our body community, and not long after this was realized, physicians found that the socalled "good chest expansion" was a misnomer. We now say that a man with a 34 inch chest normal, 32 inch contracted and 38 inch expanded has a poorer chest that an individual with 36 inch normal, 32 inch contracted and 37 inch expanded, although the former has the greater difference between expansion and contraction. The latter has the better chest because he holds his lungs, physiologically speaking, four-fifths expanded, while the former has the ratio of one to two. The reason why we have chest expansion rather than chest contraction, to my mind, is due to our upright position—the greater inspiratory effort, the traction of the abdominal wall on the chest, and the tendency of gravity to assist in expiration. The consequence is that the apices of the lung are usually poorly expanded and are the most frequent site of pulmonary tuberculosis. In weakened heart conditions we find a stasis in the lower lobes of the lung because the hilum is relatively high up—a predisposing cause to pneumonia not found in the animal.

The protective function of the cilias of the respiratory epithelium is inhibited in that they have to whip the dirt and bacteria laden mucus against gravity and we find that the lungs of Man are relatively black with dirt while those of the animals living under the same conditions are relatively pink and clean. The increased work of the respiratory epithelium is by no means an imaginary quantity. Note also that the raising of the sputum in the weakened tuberculous patient is no small effort and is due in part to weakened respiratory muscles and to the distance against gravity from the lungs to the mouth.

Alimentary Tract.—The alimentary tract in the animal is hung from the dorsal abdominal wall by a reduplication of the peritoneum, by the connective tissue between its layers, and by the bloodvessels. When the animal has eaten heartily, the viscera rest against the horizontal abdominal wall, and the habits of the animal are such that it usually lies down after eating and rests the viscera indirectly upon the ground.

In Man, the stomach has two fixed attachments, one to the esophagus and the other to the duodenum. The peritoneal attachment from the lesser curvature to the liver is fairly strong especially to the right where the omentum contains the portal vein, hepatic artery and common bile duct. The remainder to the spleen and to the colon are trivial. You will remember the transverse colon is slung across the abdomen like a hammock between the spleen and the liver and attached to the dorsal wall by the transverse mesocolon. Is it a wonder that Man suffers from gastroptosis or that the colon wanders down even to the pelvis?

Is it remarkable that enteroptosis results from the attempted suspension of from 20 to 22 feet of small intestine by a mesentery attached to the dorsal abdominal wall for a distance of say five inches? Note that the food mass passed in the cecum must travel vertically for a distance of some inches—couple this with the fact that the termination of the cecum is the one degenerating portion of the alimentary tract and you have perhaps some slight predisposing cause to appendicitis.

The use of the peritoneum as support is unique in the human family, and had it been intended for such function would have been structurally stronger in build.

Vascular System.—That arterial pressure is increased through the upright position goes without saying. The blood column is raised and a greater pressure is necessary to force a venous return from dependent parts. The effects of increased pressure are manifested in degeneration of the arteries and their rupture in the brain where the vessel walls are relatively delicate and the vascularity great. Decrease the pressure suddenly and the individual can no longer maintain the upright position as in fainting and shock. Furthermore, we have seen that Man's digestive tract lies below the heart and that while the animal is apt to rest after eating, our habits are such that we hurry off to work after a hearty meal and try to keep an excess of blood in the brain and digestive tract at the same time—with evident results. Couple this with the excessively strenuous life and great heat in our larger cities and you can account for the frequency of sunstroke. The sunbonnet movement for animals is in my opinion one of the absurdities of little knowledge.

The venous return is accomplished by a number of factors; the pressure on the arterial side, the aspirating action of respiration, the valves and character of the vein wall, the amount of support to the vein, and by the contraction of surrounding muscles. We find, therefore, that dependent veins, especially those not provided with valves, with poor support and with no surrounding muscle contraction are prone to degeneration. The caval vein is an example of lack of adaptation in that it has no valves and throws a large column of blood on other dependent veins—the hemorrhoidal, spermatic, and saphenous veins in particular and evidenced in hemorrhoids, varicocele, and varicose veins and ulcers of the leg. All tendencies toward dilation are naturally increased by forced effort or by increase in intraabdominal pressure or pregnancy.

The crowding of the small intestine against the iliac veins and the pressure of the pregnant uterus materially inhibits the venous return from the lower extremity. Either would interfere with the selection of the animal and its survival and we know how helpless the pregnant human female is when compared to an animal that may carry a greater proportionate weight of progeny.

The lymphatic return is open to the same disadvantages as the venous. Edema occurs usually in the lower extremities and in the dependent serous membranes such as the tunica vaginalis and peritoneum. The thoracic duct, returning all the products of fatty digestion, must mount against gravity from the first lumbar to the last cervical vertebra. It is, however, well adapted to its function and is provided with competent valves and a stout wall. I attribute the little difficulty found in the case of the thoracic duct more to accident than intent. It lies, as it does in the animal, between the azygos major vein and the aorta for a relatively long distance and they not only support it but in their pulsation assist in the flow of the lymph.

Urinary Tract.—The kidney is held against the dorsal abdominal wall by the peritoneum, by the various applied organs, by its fatty capsule and by the intraabdominal pressure. That this arrangement is adapted to the all-four position is illustrated negatively in Man by the fact that gravity, and the shock transmitted to the kidney through the vertical vertebral column tend to loosen it from its surroundings, the condition known to us as "the floating kidney"—a serious complication inasmuch as the bloodvessels are likely to be twisted and cause atrophy or necrosis of this important organ. The ureter is not particularly affected by the upright position, and apart from the pressure of the pregnant uterus, the bladder does not suffer materially.

Genital System.—A word has been said about the male genitals. The female suffers more than the male both in her usual and pregnant condition. The retroversions are undoubtedly caused by laxity of the ligaments and by intraabdominal pressure. Once retroverted, gravity helps to hold the uterus in the culdesac of Douglas. The function of the vagina as a support to the uterus is found only in Man—and is unique. Imperfect adaptation is evidenced in the prolapses which are directly or indirectly due to the upright position.

In spite of the evident size of the full term fetus, adaptation for pregnancy and birth are relatively poor. Pressure symptoms of the bladder, iliac veins, and sacral plexus are manifested. The abdominal distention causes marked scarring and later weakness—possibly a permanent one. Were we placed in the environment of the animal—the problem of survival would be troublesome indeed from this cause alone—the helplessness of the pregnant human female.

With these few words and still fewer facts, let us turn our attention to the general build of Man and what effect his acquired upright position has upon him, when placed under conditions which animals meet perfectly. Let us throw him into water. Man is the only animal, the remainder of the Simian family excepted, that must learn to swim, and for two reasons, first, he is primarily of arboreal instinct and tends to climb rather than to run—a condition fatal to him in water; and second, the enormous development of his lower extremities and pelvis makes him assume the upright position in water. Animals need only to make the same movements in water that they do on land—Man must learn an entirely different set of motions.

The rehearsal of these disadvantages of the upright position may sound a bit like a calamity oration and that I would have you get down on all-fours again. You will remember that Nebuchadnezzar was punished by being made to assume the four-footed position and that he was duly repentant. We have adapted ourselves—poorly in some respects it is true, but well enough for ordinary purposes. Failure in adaptation brings us the individual as a patient—one who needs help to survive. The advantages of the upright position far outweigh its disadvantages or we never should have advanced.

ON COMPARATIVE DANGER OF THE SCOPOLAMIN-MORPHIN ANESTHESIA.

BY

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of Philadelphia.

In the year 1900, Schneiderlin suggested as a means of producing surgical anesthesia hypodermic injections of large doses of morphin combined with scopolamin, and the method has received a great deal of attention. It was argued for this combination that hyoscin or scopolamin would act synergistically in depressing the brain, but would overcome the dangerous effects of the large quantities of morphin. Such a belief has probably arisen from the failure to make a clear distinction between the actions of atropin and of scopolamin.

The alkaloid scopolamin is now universally recognized as identical with hyoscin, and the last edition of the United States Pharmacopeia, although recognizing the two names, so defines them that the same substance may be properly dispensed under either name. The common belief that though chemically identical they are alkaloids from different plants is erroneous, for the Pharmacopeia defines scopolamin as, "An alkaloid obtained from plants of the Solanaceæ; chemically identical with hyoscin." It is evident that the manufacturing chemist may derive his scopolamin from hyoscyamus, from scopola, or from any other member of the family which will produce an alkaloid answering to the tests of the Pharmacopeia. As the term hyoscin has been used in this country for many years and scopolamin is a comparatively new one, I shall speak of this alkaloid under the name of hyoscin.

The statement of Schneiderlin that hyoscin and morphin are antagonistic in their actions can arise only from an ignorance of the physiologic effects of the two drugs. The chief danger in morphin poisoning is of respiratory failure; hyoscin is not in any dose a respiratory stimulant, and in large doses is actively depressant to this function. It is true that hyoscin dilates the pupils while morphin contracts them, but it is impossible for us to conceive what bearing this has upon the dangerous action of the drug. The effects of the drugs upon secretions are in no way opposing, for while it is not probable that hyoscin greatly lessens the flow of urine, it certainly does not act as a stimulant to the kidneys; moreover, hyoscin, while acting in many cases as a somnifacient, has no power comparable to that of morphin in lessening susceptibility to pain, and it can therefore hardly be claimed to increase greatly the analgesic effect of morphin. A study of the physiologic actions of these two drugs must, therefore, lead to the conviction that the combination is an essentially irrational one.

It is not always, however, safe to draw positive conclusions of the clinical values of drugs from purely scientific evidence, and I have thought it worth while to review briefly the records of those cases in which the method has been tried; the more especially as certain misstatements concerning these cases have been published by French authors and abundantly copied into American literature. I have collected from literature 1,988 cases. In every instance I have myself consulted the original authorities (except one), and not trusted to the quotations of any author who may be biased one way or the other. In these cases there have been 23 deaths, of which, after careful reading of the descriptions of the symptoms and the authors' own conclusions, it seems to me justifiable to attribute the death to the anesthetic in nine instances. The mortality in this method reaches, therefore, the astounding figure of one death in 221 anesthesias. In comparison with one death in 15,000 from ether, hyoscin and morphin anesthesia becomes a veritable slaughter.

	No. of Cases.	Total Deaths.	Deaths due to Anesthesia.	Anesthesia unsatisfactory.	Remarks.
Bakes	200	3	1	—	
Blos	105	1	0	50	
Bonheim	70	0	0	—	No details given.
Defontaine	30	0	0	24	
Dirk	260	3	2	231	Says avoid in old.
Flatau	30	1	1	8	
Grevesen	69	0	0	15	Reports only cases in which chloroform or ether was not used.
Hartog	123	0	0	—	Used only as adjunct to ether.
Isreal	332	3	2	300	Says useless in young.
Korff	200	1		—	Figures not definitely given.
Landau	17	1	1	Usually	
Marmetschke	17	1	0	11	
Monod	3	0	0	—	Used as adjunct to chloroform.
Morris	10	0	0	7	
Ries	72	3	0	—	
Schickelberger	11	0	0	7	
Seelig	65	0	0	—	Used as adjunct to ethyl chlorid.
Stolz	5	0	0	5	
Sudeck	1	1	1	—	
Terrier	26	—	—	—	Details of results not given.
Von Steinbüchel					
Volkman	20	0	0	17	
Weisinger	200	0?	0	Usually	No details given.
Wild	8	0	0	6	
Witzel	3	0	0	0	
Wood	15	1	0	6	
Ziffer	64	3	0	49	
Zahradnicky	232	1	1	132	Seen only in abstract.
Total	1988	23	9	868+	

It has been denied by a number of writers that these deaths are properly attributable to the anesthetic. The two fatalities recorded by Isreal may be mentioned especially because they have been vigorously combated and because they show how false conclusions can be reached through misquotation by prejudiced writers. In one of these patients Terrier states that at autopsy there was found advanced fatty degeneration; he neglects to say, however, that Professor Orth, who made this autopsy, asserted his belief that the fatty degenerations were the result of the hyoscin and morphin. That the deception of Terrier's statement may be the more evident I quote the original language of Isreal: "Orth meinte wenn eine phosphor vergiftung nicht vorliege, könne man den Befund nur auf die Narcotica beziehen."

The other case was in a man with a one-sided renal tuberculosis. As the patient was in good general condition at the time of operation, and as the other kidney at autopsy was found perfectly healthy, and as the pathologic lesions were precisely the same as those in the case just quoted, as well as those described by other authors, it seems only fair to accept Isreal's own conclusion that the anesthetic was responsible for the result.

In the table the column headed "anesthesia unsatisfactory," includes all cases in which ether or chloroform was administered during the operation. It is only fair to state that the quantity of these agents required was nearly always less than would have been needed if morphin had not been used. That the danger from ether or chloroform is diminished by this fact is, however, by no means proved nor even probable. A considerable experience with both ether alone and morphin-ether anesthesia in dogs has led me to the opinion that, although far more convenient, the preceding use of morphin rather increases than diminishes the likelihood of anesthetic accidents.

The contention that the method while not generally applicable is of great service in certain types of cases may possibly be true, although there is no evidence forthcoming as to the special indications for the preference of this method over ether. Certainly it is not in cases of advanced renal disease, for every clinician will hesitate seriously before giving 0.03 gm. (½ grain) of opium to a nephritic. While some authors claim it is of service in the aged, others are equally positive in their assertions that it must be especially avoided in old people. In view of the facts that the combination of hyoscin and morphin for the production of surgical anesthesia is scientifically irrational, and has yielded a mortality of over four per thousand and that in 69 percent of the cases the anesthesia has been unsatisfactory, we think it must be either a very bold or a very ignorant surgeon who will persist in its use.

Bids on New Contagious Diseases Hospital.—Bids from twelve firms were received for the construction of the new contagious diseases hospital for Philadelphia, one firm bidding $785,982 to complete the work in 18 months, over $105,000 less than the sum available.

THE DANGER OF TRAUMATISM TO THE UTERUS DURING DILATION.

BY

C. A. STEWART, M. D.,

of Duluth, Minn.

Of the recorded instances of injury to the uterus during operative procedure, the majority have been those of perforation of the walls of the organ by the metal sound or the curet. Untoward results from the use of the uterine dilator or divulsor are scarcely mentioned, although in my own experience it has been the sole factor in the causation of accidents of this class, and while my experience in this may have been unique it has so impressed me that I am inclined to regard many of the instances that have been noted as perforation by the curet, when its use had been preceded by the dilator, as those in which the traumatism was really due to the latter instrument, but the damage remained undiscovered until its existence was revealed by the curet.

As a basis for my belief I will briefly report three cases which have occurred under my observation.

Case I.—The patient was a woman of 32, married, and the mother of five children. I saw her in consultation and was given the following history by the attending physician.

For several days the patient had been trying to bring on a delayed menstrual period. What she had done he was unable to say, but the day previous the flow had appeared and had increased during the night and later had become so profuse that some six or eight hours before I saw her, he had dilated and explored the uterus and, as he was unable to find anything or to control the flow, he had packed it with gauze to keep matters in abeyance until he could get assistance.

Notwithstanding his inability to find anything in the uterus he expressed himself as being confident that she was pregnant and that the hemorrhage was due to the partial detachment and retention of the membranes. Nothing additional that was of importance was learned from the patient but it was noticed that she was very nervous and apprehensive that the hemorrhage would recur.

She showed the effects of the loss of blood and was so weakened that it was decided to give her an anesthetic preliminary to determining the condition which existed and be prepared to go on and do whatever was necessary for her relief. This was accordingly done, the gauze removed and after the usual antiseptic preparation the cervix was drawn down with a double tenaculum and found to be amply dilated, so the finger was used to explore the uterus; it passed the os readily and detected a mass in the cervical canal which followed the finger down and proved to be a loop of intestine. The bowel was pushed back and, following the loop upward with my finger, I found an extensive rent in the posterior wall of the uterus just above the juncture of the cervix and body of the organ. This tear involved so much of the uterine wall that I felt confident that an attempt to repair the injury would in all likelihood prove futile, and, as the mesenteric attachment to the prolapsed bowel seemed intact, I judged that a vaginal hysterectomy would best conserve the interests of the patient and this was accordingly done.

After removal, it was seen that the tear involved fully three-fifths of the uterine wall, there being but a small portion of the anterior aspect of the organ which was left intact. There was no evidence of pregnancy discoverable. Two days after the operation the patient developed symptoms of intestinal obstruction which proved fatal. No autopsy was obtained, but as the case developed I felt positive that the bowel had been injured when it was prolapsed to an extent that destroyed its vitality. The history of the case previous to my connection was very vague and unsatisfactory and I am inclined to think that the bowel had been prolapsed and pushed back before the uterus was packed.

Case II.—In this case, which presents many parallels, I had the benefit of a full and very intelligent history of all that had been done previous to my connection with it. The patient was aged 28, and was the mother of one child less than two years old. She was about two and one-half months advanced in pregnancy when she developed symptoms that indicated a miscarriage and sent for her physician who decided that an abortion was inevitable and as the hemorrhage was too profuse for safety he decided to empty the uterus of its contents. After having given an anesthetic he proceeded with the necessary dilation and afterward, examining with his finger, he felt a soft mass which he thought to be the gestation sac until he had drawn it down to the extent of six or seven inches when he found that he was making traction on the bowel and that it was detached from its mesentery.

He at once pushed the bowel back through the opening into the abdominal cavity and packed the cervix and vagina to prevent further extrusion.

About ten hours elapsed before I saw her and at this time there was a very appreciable amount of shock. She was very restless, pulse 110, temperature 98°. She was very nervous and apprehensive and great tenderness and rigidity existed over the entire abdomen, although she had received one grain of morphin since the accident.

With the history given and the conditions present it was evident that immediate operation for the relief of the intraabdominal condition was imperative. After hasty preparation the abdomen was opened and about one pint of clotted blood found among the coils of intestine; after removing this and locating the injured portion of the bowel it was found that about 26 inches of the ileum was detached from its mesentery and was flaccid and black from loss of its blood supply. This detached portion was resected and an end-to-end anastomosis made with the aid of the Murphy button. The uterine contents were then removed through the tear in the uterine wall and the wound therein closed by a couple of buried catgut stitches supplemented by a continuous suture of fine catgut to approximate the peritoneal covering, and the abdomen was then closed without drainage.

Case III.—In this case it was decided to dilate and curet the uterus as a preliminary to abdominal section. The uterus was imperfect in point of development and for fear of injury the dilation was very moderately and carefully done and the curetment was made with a small Skene's curet, which as is well known is a medium between the sharp and the dull instrument, and the cavity was then packed with a strip of the ordinary gauze packing. After having opened the abdomen, in examining the uterus, I noticed a protuberance on the posterior surface in approximately the same location in which the tears had been found in the other two cases; this promptly disappeared upon withdrawing the gauze and I then found that a lesion existed in the posterior wall which extended to the peritoneum. I cut through the peritoneal covering and found a transverse tear which I scrutinized carefully and feel positive was caused by the dilator.

The cases cited comprise my entire experience with injuries to the uterine wall during operation. In analyzing them, my conclusions as to the first may be questioned because I was unable to get any satisfactory history previous to my connection with it. Conceding this, I regard it as inconceivable that any instrument, other than the dilator, could by any possibility destroy the continuity of three-fifths of the uterine wall without the operator getting some inkling of what was transpiring.

In the other two cases there were excellent opportunities afforded to note the character and extent of the injury after the occurrence. It certainly seems that the uniformity of the lesion in all three instances should go far toward eliminating doubt upon this point and also that the operation of cervical dilation is attended with definite and it may be serious risk.

A noteworthy feature in each case was the uniformity of location and direction of these injuries. They were all just above the juncture of body and cervix on the posterior aspect of the organ and were transverse in direction.

If we take these cases as a basis for the assumption that the uterine walls are more likely to give way at a certain point when subjected to severe strain and that point is the one indicated, it follows that this is either the point showing the least power of resistance or else it is where the greatest amount of force is exerted, or it may be both influences combined.

A moment's consideration will enable one to see that the location of the rupture is where the curet, if used subsequently, would be very likely to leave the uterine canal and pass through the wound into the abdominal cavity, thus affording the intimation of the injury done, and it would seem, in some cases at least, that the curet may have received undeserved blame as having been the cause of the injury instead of receiving credit for having been the agent of discovery.

Circulars on Tuberculosis.—The Minnesota State Board of Health has issued a series of circulars relating to tuberculosis, the first of which is issued to physicians, the second to the patient; the third is on the care of the sick room of the tuberculous, to be distributed by physicians to tuberculous patients and others; the fourth is addressed to the general public, the fifth to those interested in schools, and the sixth gives a concise statement of methods of disinfection.

AN UNUSUAL ANOMALY OF THE PALMARIS LONGUS MUSCLE.

BY
HENRY E. RADASCH, M. S., M. D.,
of Philadelphia.
Associate in Histology and Embryology and Assistant Demonstrator of Anatomy in the Jefferson Medical College.

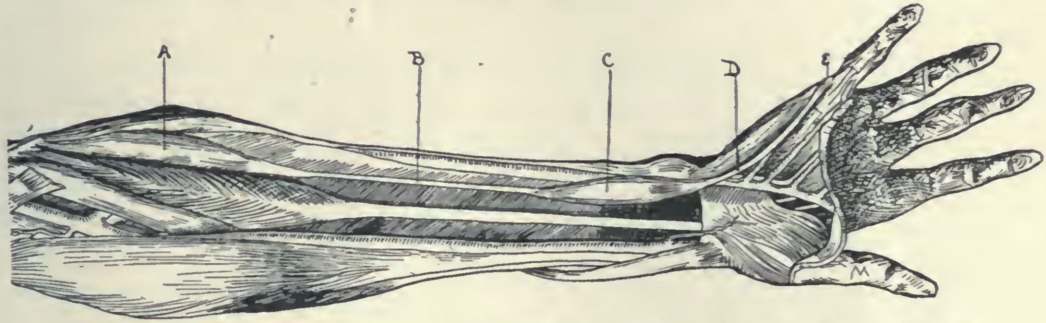
(From the Anatomical Laboratory of the Jefferson Medical College.)

While pursuing the work of instruction in the Anatomical Laboratory it was my fortune to note a rather unusual anomaly of the palmaris longus muscle. Although this muscle is quite variable, still its peculiarity will justify a description.

This anomaly occurred in the right arm of a well-nourished and well-developed female of average height. Upon tracing the muscle to its insertion, the student working upon the part found that it deviated from the usual course in a most peculiar manner. Upon examining the muscle and carrying out the dissection to its insertion I found the following condition: It arises from the front of the internal condyle of the humerus, the intermuscular septa and the deep fascia of the forearm, as a fleshy bundle about 8 cm. in length, 1.5 cm. in its widest portion and about 6 mm. in thickness. This fleshy belly ends in a flat ribbon-like tendon about 2 cm. below the upper third of the forearm; this tendon continues to about 2 cm. below the middle third where it passes into a second fleshy belly that measures about 6 cm. in length, 1 cm. in width and 4 mm. in thickness. This muscular portion passes down to the anterior annular ligament where it continues as a small cord-like tendon, about 3 mm. in thickness, to be inserted into the ulnar side of the phalangeal end of the metacarpal bone of the little finger.

From an examination of the accompanying cut it can very readily be seen that the lower belly is not one of the muscles of the hypothenar eminence, as it lies in the lower portion of the forearm and is easily separated from the neighboring muscles. Its lower tendon is also unconnected with any other tendon or muscle, although it runs in the fascia of the abductor minimi digiti.

In examining the anatomies at my disposal, I find that Cunningham, Schultz, Spalteholz, Deaver, McClellan, and Gerrish make no mention of variations of this muscle. Gray (DaCosta edition) gives the following: "This muscle is often absent. It may be tendinous above and muscular below; or, it may be muscular in the center with tendons above and below; or, it may present two muscular bundles with a central tendon; or, finally, it may consist simply of a mere tendinous band."



Anamalous palmaris longus muscle. A, upper belly and origin; B, upper tendon; C, lower belly; D, lower tendon; E, insertion.

Morris (third edition) states that it may be double. The fleshy part is sometimes below and the tendon in part or entirely above. It may take an additional head from the radius or the coronoid process. Its insertion may be into the fascia of the forearm, the flexor carpi ulnaris, the short muscles of the little finger or one of the carpal bones.

The description found in Allen's "Human Anatomy" is, however, the most complete. According to this author the muscle may be fused with one or more of the flexors of its own group, notably the ulnaris and digital flexors. It appears to have close affinity with the abductor pollicis since it may send accessions to it or be inserted upon it. This muscle may be inserted into the ulna or the carpus; when the latter it is inserted most frequently into the pisiform bone. Slips may pass to the abductor minimi digiti.

From the foregoing description it will be seen that this anomaly differs from any so far described. It presents the unusual condition of two bellies and two tendons with the peculiar insertion into the metacarpal bone of the little finger into the internal surface of its phalangeal end.

I desire to thank Mr. Elsinger, for his able reproduction of the dissection, and Mr. Davidson, on whose part the anomaly occurred.

The Alvarenga Prize.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about $180 will be made on July 14, 1907, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and must be received by the secretary of the college on or before May 1, 1907. Each essay must be sent without signature, but must be plainly marked with a motto and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award.

To Honor the Curies.—Andrew Carnegie has announced that he will present to the University of Paris a fund sufficient to yield $2,500 annually, to be used to pay for scholarships for research in the natural philosophy laboratory, which was recently created for the late Professor Curie. The scholarships will be named Bourses des Curie, and will be open to students of all nationalities. Mme. Curie was recently appointed professor of sciences at the University of Paris, the chair previously held by her husband, and commenced her lectures at the Sorbonne on November 5.

SPECIAL ARTICLES.

SOCIETY FOR EXPERIMENTAL BIOLOGY AND MEDICINE.

Proceedings Reported by the Secretary.
WILLIAM J. GIES, PH. D.,
of New York.

The eighteenth meeting of the Society for Experimental Biology and Medicine was held at the Cornell Medical School, in New York City, on Wednesday evening, October 17. The President, Simon Flexner, was in the chair.

Members Present.—Atkinson, Auer, Beebe, Buxton, Crile, Dunham, Elser, Emerson, Ewing, Field, Flexner, Flournoy, Foster, Gibson, Gies, Hatcher, Lee, Levene, Levin, Loeb, L., Lusk, Mandel, A. R., Meltzer, Meyer, Murlin, Norris, Park, Richards, Salant, Schwyzer, Shaffer, Torrey, Wallace, Wolf, Wood, Yerkes.

ABSTRACTS OF ORIGINAL COMMUNICATIONS.[1]

The Formation of Glycogen from Sugars by Muscle, with a Demonstration of a Perfusion Apparatus.—R. A. HATCHER and C. G. L. WOLF.

Contrary to the findings of Külz, saccharose does not yield glycogen in muscle. Glucose is a direct glycogen former in muscle. No glycogen is formed either from glucose or saccharose in the glycogen-free muscles of animals which have been starved and treated with strychnin.

A perfusion apparatus was shown which permits the simultaneous and separate perfusion of the hind limbs of an animal and the arterialization of the blood by the lungs of two animals, each pair of lungs being used for an individual limb.

Bile Media in Typhoid Diagnosis.—B. H. BUXTON.

In the author's work 10 cc. of blood, drawn directly from a vein, were distributed into three flasks containing 20 cc. each of sterilized ox bile. This medium was used with great success in typhoid diagnosis.

The Inconstant Action of Muscles.—WARREN P. LOMBARD and F. M. ABBOTT.

The movements of the hind leg of the frog which are generally ascribed to finely adjusted nervous coordination, are in fact largely the result of the mechanical conditions under which the muscles act. Those conditions differ with each new position of the bones entering into the joints of the limb, and consequently alter the effect of the contraction of the muscles as the positions of the bones change during the course of any given movement. Thus a muscle which in one position of a bone acts as a flexor, in another position acts as an extensor, and a muscle which in one position of a bone may carry it dorsally, in another position may carry it ventrally. Manifestly it is absurd to try to class muscles as flexors and extensors, for example, or to try to name them according to the movements which they are supposed to produce. A study of central coordination must be postponed until the effects of peripheral coordination based on joint and muscle mechanics has been ascertained.

The Senses and Intelligence of the Chinese Dancing Mouse.—ROBERT M. YERKES.

For a few days during the first month of postnatal life dancing mice respond definitely to sounds, but neither direct nor indirect methods of testing auditory sensitiveness furnish any evidence of it in the adult. Brightness vision is fairly acute; color vision is poorly developed. In visual discrimination the mice apparently depend upon brightness differences. The behavior of the dancing mouse is readily modifiable. Modifications of behavior occur more rapidly in the male than in the female. Individual differences in plasticity and in the permanency of modification are marked. There is little evidence of any form of imitative tendency in behavior.

On the Motor Activities of the Alimentary Canal after Splanchnic and Vagus Section.—W. B. CANNON. (Presented by S. J. Meltzer.)

Movements of the Esophagus.—Splanchnic section resulted in no deviation from the normal. Bilateral vagus section resulted in the well-known paralysis of the thoracic esophagus. A distinction must be drawn between the immediate paralyzing effect on the esophagus of cutting the vagi, and the later partial or almost complete recovery of efficiency by a local mechanism in the esophageal wall.

Movements of the Stomach.—Splanchnic section caused no alteration of normal movements. The immediate effect of vagus section was tardiness in the starting of gastric peristalsis after food was introduced into the stomach. Again a distinction must be drawn between the first and the later effects of the vagus section.

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[1] The abstracts presented in this account of the proceedings have been greatly condensed from abstracts prepared by the authors themselves. The latter abstracts of the communications may be found in current numbers of the Journal of the American Medical Association, *American Medicine*, the New York Medical Journal and in Number 1 of Volume iv of the Society's proceedings.

When all the extrinsic nerves were cut the gastric waves passed at the usual rhythm, but were unlike those seen when the vagi alone were cut, in being, from the first, deep and powerful contractions. After death in these cases the stomach was usually found strongly contracted.

Passage of Carbohydrate and Protein Food from the Stomach.—After total suppression of impulses through the splanchnics both carbohydrate and protein foods are discharged through the pylorus at practically the normal rate. In the absence of impulses through the vagi and in the presence of impulses through the splanchnics the discharge of both carbohydrate and protein is notably retarded. But this retardation, especially when protein is fed, is much more marked soon after the operation than it is later. Again a distinction must be drawn between the immediate depressing effect of vagus section and the later considerable recovery of normal functioning.

When all extrinsic nerves have been cut, there is, as in the cases of vagus section alone, a difference between the immediate defect and the later partial recovery of normal function.

Passage of Food through the Small Intestine.—After splanchnic section the rate of transit from pylorus to ileocolic sphincter, when protein was fed, was much accelerated, and after vagus section it was much slower than normal. The rate was slower also when all nerves were cut. The variation from the normal was in all cases less with carbohydrate food than with protein.

Rhythmic segmentation of the food in the small intestine was observed in every condition of nerve section.

The persistence of characteristically different rates of discharge of protein and of carbohydrate food through the pylorus, after splanchnic section, after vagus section, and after severing both sets of nerves in the same animal, definitely proves that the control of this differential discharge is local and not mediated through the central nervous system.

Experimental and Clinical Observations upon Direct Transfusion of Blood.—G. W. Crile.

By means of end-to-end anastomosis by suture, blood was transfused in 74 dogs. Blood was transfused, retransfused and reversely transfused over a period of a month in the same dogs. There were no aglutins or hemolysins produced, no hemoglobinuria, and no nephritis. Blood was found physiologically interchangeable. Every degree of hemorrhage, even to cessation of the arterial stream was successfully treated.

In six clinical cases of hemorrhage treated by transfusion of blood the results were the same as in the laboratory. The hemorrhage factor was eliminated.

On the Normal Peristaltic Movements of the Ureter.—D. R. Lucas (by invitation).

In dogs narcotized with morphin the peristaltic *contractions* of the middle part of the ureter occur at intervals varying between 6 and 15 seconds. The curves representing these contractions are of variable but generally of fairly good size. These peristaltic contractions are apparently those which Engleman and other writers had under observation. The author found, however, *that the renal pelvis as well as the uppermost part of the ureter exhibits peristaltic contractions of another kind;* they are small, of short duration and occur as frequently as every two or three seconds.

In some animals in which the contractions from the middle part of the ureter presented fairly large curves it frequently happened that these curves were superimposed by finer undulations. From the lower end of the ureter only a few tracings were obtained. It seeems that in the lower end, also, the small and more frequent contractions predominate.

Anesthetics. *e. g.*, chloroform or ether, exercise pronounced inhibitory effects on the ureteral peristalsis. The relatively slight and more frequent contractions appear to be less affected than the others, by such treatment.

Gastric Peristalsis Under Normal and Certain Experimental Conditions.—John Auer.

The author has devised a very simple and satisfactory means of studying gastric peristalsis. He finds that if a well fed rabbit is stretched out on its back and the hair of the epigastrium clipped, any observer may see active gastric peristalsis under a closer approximation to physiological conditions than the saline bath affords. Mere inspection of the abdomen of a rabbit in this position shows that the stomach is far from inert. A short time after preparing the animal, peristaltic waves are seen coursing over the stomach from left to right, increasing in strength as the pyloric third is approached. These waves are easily registered by placing a tambour over the stomach region to be studied and connecting it with a writing tambour or manometer. The writing tambour registers not only the change in volume of the stomach part it overlies, but also the respiration of the animal; in many cases, with delicate adjustment of the writing pen, the heart-beats are also marked.

A study of gastric peristalsis by this method has shown that as a rule the stomach is motionless for a while after the animal is placed upon its back and its limbs are extended, but that active peristalsis is reestablished a few minutes afterward. Cessation of gastric peristalsis is also caused by the operation of opening the abdominal cavity, by section of both vagi in the neck and by subcutaneous injection of morphin. Inhibitory effects are also caused by inhalation of ether and by fasting. Intravenous injection of curare does not abolish gastric peristalsis so long as artificial respiration is maintained. Feeding reestablishes peristalsis after its discontinuance from fasting.

Reflex Inhibition of the Cardia in Rabbits by Stimulation of the Central End of the Vagus.—S. J. Meltzer and John Auer.

At the last meeting the authors reported that by stimulation of the central end of the vagus a tetanic contraction of the entire esophagus can be produced in dogs and cats but not in rabbits. In continuation of their studies the authors have found that *stimulation of the central end of the vagus causes a distinct inhibition of the cardia in rabbits.* The cardia of the rabbit is normally contracted in a moderate degree. Furthermore at each deglutition the peristaltic movements of the esophagus terminate in a characteristic contraction of the cardia—it sinks into the stomach. Finally after a stimulation of the peripheral end of the vagus the cardia contracts in the same characteristic way. We found that these three states of contraction can be definitely inhibited by a stimulation of the central end of the vagus. In the first place, the cardia relaxes, bulges up during such stimulation. In the second place, if a deglutition occurs the cardia never contracts as long as the central end of the vagus is being stimulated. Finally the interruption of the stimulation of the peripheral end of the vagus does not bring on a contraction of the cardia while the central end is being stimulated.

Continuous Anesthesia by Subcutaneous Injection of Magnesium Sulphate in Nephrectomized Animals.—D. R. Lucas and S. J. Meltzer.

Nephrectomy prevents rapid excretion of magnesium sulfate after its subcutaneous introduction. Consequently half the dose of that salt that is required per kilo to anesthetize a normal rabbit suffices for a nephrectomized rabbit. Furthermore, the anesthesia caused in nephrectomized rabbits by half the usual dose is deeper and lasts longer, because most of the magnesium compound is unable to leave the body. The anesthetic results with magnesium sulfate in normal and nephrectomized rabbits are in sharp contrast to the toxic effects of strychnin under analogous circumstances.

Remarks on and Exhibition of Specimens of a Metastasising Sarcoma of the Rat.—Simon Flexner and J. W. Jobling.

The exhibited specimens consisted of a mixed-cell sarcoma of the seminal vesicle of a white rat which has been transplanted successfully into a series of white rats. The original tumor, which was found in a rat dying spontaneously in the laboratory, was as large as a walnut. Its surface was covered with peritoneum and its consistence was firm. Thus far it has been transplanted to full-grown and young rats, both by subcutaneous and by intraperitoneal inoculation. The features of the tumor which the authors especially emphasized were the large and numerous metastases which have appeared in the inoculated rats. The rat showing the original tumor did not show visible metastases, but in the animals which have succumbed after successful inoculation, the metastases have been numerous and of large size. They have appeared in the lungs and kidneys, and in one instance, following intraperitoneal injection, in the ribs and intercostal muscles. As the specimens show, the nodules in the lungs and kidneys may reach large dimensions, taking in a segment of the kidney or the entire lobe of the lung. The animal in which metastases existed in the intercostal muscles showed large nodules in the lung; in this animal a growth from the lung into the pericardium, and from the pericardium into the heart wall, took place. The secondary tumors have the same structure as the primary tumors; they are made up of spindle-shaped and polygonal cells, the latter being often of large size, with lobed or regular nuclei. Intercellular substance is present, and it is in places fibrillated.

The epicardium in the rat in which growth occurred in the myocardium, showed invasion of the serosa by the sarcomatous cells, spreading doubtless from the nodule mentioned and causing sarcomatosis of the serous membrane. This tumor is being further transplanted and studied in its biological relationships.

The Influence of Water on Gastric Secretion and the Combining Power of Mucus with HCl in the Stomach.—N. B. Foster and A. V. S. Lambert.

Pawlow called attention to water as a stimulant of gastric secretion, but the degrees and limitations of stimulation produced by water in food Pawlow has not recorded. Using dogs with Pawlow fistulas, it was observed that with definite amounts of cracker meal as food the amount and rate of gastric secretion depend to some extent on the amount of water given the dog with his meal, *i.e.*, when small amounts of water are given, the secretion is slow and scanty. If larger quantities of water are mixed in the food the secretion is more abundant.

The degree of acidity of gastric juice depends upon the amount of secretion. When this is considerable it is much more acid then when the secretion is scanty. Pawlow is of the opinion that the degree of acidity of the gastric juice is constant; this can hardly be correct, however, for the total acidity changes from hour to hour. Pawlow evidently determined free HCl only but the amount of free acid is dependent on the amount of mucus secreted, since mucus like other proteins combines with HCl. Mucus in the presence of pepsin combined with HCl to a very considerable extent and undergoes digestion forming proteoses.

The Action of the Electric Current on Toxin and Antitoxin.—Cyrus W. Field and Oscar Teague.

The authors alluded to the unsuccessful attempts of various observers to ascertain definitely the nature of the electric charges carried by particles of toxins or antitoxin. Believing that such failures were due to the disturbing influences of the products of electrolysis, the authors successfully eliminated the latter in their experiments. They found that both toxin and antitoxin particles travel toward the cathode and must therefore carry positive charges. This holds true when the tested fluid is made either acid or alkaline in reaction.

Since a true chemical reaction can take place only between ions carrying charges of opposite sign, the fact that toxin and antitoxin are both electropositive would indicate that the combination of these two substances represents not a chemical union, but rather the absorption of one colloid by another.

Nuclein Metabolism on a Dog with an Eck Fistula.—J. E. Sweet and P. A. Levene.

A dog with an Eck fistula was maintained in nitrogenous equilibrium on a diet consisting of cracker meal, plasmon and lard. In this dog the output of uric acid was greater than from the normal animal. During fasting, after administration of nuclein, nucleic acid or of adenin, and during a period of feeding with a diet containing a small proportion of protein but of high caloric value, the excretion of uric acid was also increased. Ingested thymin was recovered in large proportion from the urine. It was impossible to detect thymin in the urine after feeding nuclein or nucleic acid.

On the Fractioning of Agglutinins and Antitoxin.—R. B. Gibson and K. R. Collins.

The results of the work thus far accomplished have demonstrated the untrustworthiness of a differentiation of the antibodies into those contained in euglobulin and those in pseudoglobulin, a finding in accord with the recent criticisms of salt fractionation by Haslam and by Osborne and Harris.

No evidence has been found in these experiments to show that the agglutinins developed in rabbit, goat and horse serums can be either euglobulin or pseudoglobulin, or that these antibodies can be separated from one another by such ammonium sulfate fractionation.

Further Observations of the Effects of Ions on the Activity of Enzymes.—William N. Berg and William J. Gies.

The authors have found that the sequence of zymolysis both in velocity and extent in given groups of equivalent (percentage, molecular, normal, dissociated) acid or basic solutions varies considerably with the nature of the protein. This fact makes it impossible accurately to formulate statements regarding various phases of peptolysis or tryptolysis without specifying the particular protein involved in the process; it also renders doubtful various general conclusions of common acceptance pertaining to digestion that have been derived, in one research or another, from the use of a single protein. A study of the peptolysis of *many proteins* in a given series of acid solutions has therefore been undertaken, and an effort will be made to extend the observations to the tryptolysis of the same proteins in a similar series of basic solutions.

The speed and degree of both peptolysis and tryptolysis are resultants of conflicting influences. In the case of peptolysis, for example, the hydrogen ions in a given acid solution are always essential and positive factors, whereas, the accompanying anions or molecules (perhaps both) appear to be, *as a rule*, nonessential and inhibitory factors. That acid *molecules* are not necessarily inhibitory in peptolysis, however, was shown in a number of experiments with acetic acid, which neither favored nor interfered with peptic digestion when present in different amounts in solutions containing constant proportions of hydrochloric acid.

THE LARVICIDAL VALUE OF COPPER AND COPPER SALTS.

BY
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There recently appeared in *American Medicine* (Vol. x, No. 16, page 633) an editorial in which were mentioned experiments upon the larvicidal value of copper and copper salts conducted by Dr. C. L. Marlett of the Ethnological Bureau. This observer reached the conclusion that cupric sulfate solutions having a strength of 1–5,000,000 parts of water, were toxic to mosquito larvas, destroying them in "a few hours." The young larvas were said to be more susceptible than the old. Similar results were obtained with metallic copper. The editorial further called attention to the value of these discoveries (if verified) to military sanitarians, especially those serving in the tropics, and it was with a view to determining their accuracy that the following investigations were conducted.

The larvas employed were those of several varieties of culex, no anopheles being obtainable. They were of various sizes and degrees of development. The solutions were made up with the water in which the insects were found, and some of the sediment from their respective breeding places was placed in each jar, so as to simulate natural conditions so far as practicable. All the insects employed in each series were obtained at the same time from the same breeding place.

SERIES 1.

1. Thirteen hundred cc. of water containing numerous larvas in all stages of development was placed in a burnished copper vessel where the fluid came in contact with the 992 sq. cm. of copper surface. Five days later one-fourth of the larvas was dead, but fully developed insects emerged at intervals for 17 days, and all larvas were not dead until the twenty-fourth day.

2. Larvas were placed in 1–1,000,000 solution of cupric sulfate. Daily observations revealed that mosquitos developed at irregular intervals during the first 46 days. On the eleventh day when the solution had evaporated to one-fourth of its original volume and was therefore four times its original strength, 13 small larvas hatched out. The solution was now kept diluted to its original strength. The larvas gradually diminished in number, but it was not until 80 days after the solution was made up that all were dead.

3. Larvas were placed in a 1–2,000.000 solution of cupric sulfate. This was allowed to evaporate to one-fifth its original volume, and was then diluted to its former strength. Eight larvas developed from the egg on the eleventh day. Three imagines were developed from the larvas and pupas in this solution, but, though the larvas gradually diminished in number, and but few formed pupas, all were not dead until the eighty-fourth day after the solution was made up. In this solution the larva which remained alive longest, developed quite the largest breathing tube I have seen in any insect of his class.

4. In a solution of 1–3,000,000 strength, two imagines developed; the larvas gradually decreasing in number until all were dead on the seventeenth day.

5. In a solution of 1–4,000,000 strength one mosquito developed, and larvas, in decreasing numbers were alive until the twenty-eighth day.

6. In a solution of 1–5,000,000 no mosquitos developed and larvas in decreasing numbers were alive till the twenty-eighth day.

7. Control.—Twe mosquitos developed, larvas gradually diminished until all were dead on the twenty-sixth day.

This series is interesting especially because of the demonstration that the copper salts and metallic copper had no appreciable effect in hastening the death of larvas. The fact that in experiments two and three larvas developed from the egg in such solutions and lived for so long a time is especially interesting. Such protracted existence in the larval stage is unique in my experiments. In none of these solutions, the control included, did more than one-fourth of the larvas develop into mature insects.

SERIES 2.

1. In a 1–1,000,000 solution, insects developed to mature imagines at intervals during the first 26 days. All larvas were dead on the twenty-eighth day.

2. In a 1–2,000,000 solution, insects developed during the first nine days. All larvas were dead on the forty-second day.

3. In a 1–3,000,000 solution, insects developed during the first 42 days. The insect emerging on the forty-second day had for 12 days been the only surviving larva or pupa.

4. In a 1–4,000,000 solution, insects developed during the first five days. All larvas were dead on the thirtieth day.

6. Control.—Insects developed during the first eight days. All larvas were dead on the twenty-second day.

The proportion of fully developed insects to larvas, in all the solutions (controls included) of both series was quite uniform. It did not appear that the presence of cupric sulfate in these dilute solutions had any appreciable effect upon the larvas, unless it may have been that after an average period of about 15 days, it inhibited their development into pupas.

SERIES 3.

All the larvas and pupas employed in this series were (unlike those in the two preceding) quite mature, and the size of the larvas was remarkably uniform.

1. A 1–100,000 solution contained 12 larvas and pupas. Three mosquitos developed in the first five hours. Seven more appeared during the next three days. All larvas and pupas were dead in five days. Almost all the pupas (10), but no larvas, developed into mature insects.

2. A 1–500,000 solution contained six pupas and 26 larvas. From this also three mosquitos developed in the first five hours. In the three following days ten other insects emerged. The larvas remained alive for 13 days after the solution was made up, but no more imagines developed after the third day. In this solution all the pupas and about one-fourth of the larvas developed.

3. The 1–1,000,000 solution contained 11 pupas and nine larvas. In it, nine mosquitos developed in the first five hours. Thereafter eight other insects emerged at intervals during the next 13 days. All larvas were dead in 18 days. In this solution all the pupas and two-thirds of the larvas developed.

The control solution contained 14 pupas and 19 larvas. Five hours later six insects had fully developed. At intervals until the eighteenth day, 24 other insects emerged. The remaining larvas were dead on the nineteenth day. All the pupas and more than five-sixths of the larvas had developed into the imago.

An analysis of the foregoing data would appear to justify the following conclusions:

Cupric sulfate in solutions of 1–100,000 strength is prejudicial to the development of the culex larvas into pupas, but has little influence in preventing the emergence of the imago from mature pupas.

In solutions of 1–500,000 it apparently has a temporary stimulating influence upon the development of mature larvas but has a toxic effect upon the development of those larvas which do not respond to this stimulus in the first few (three) days.

In solutions of 1–1,000,000 it has no toxic effect on pupas, and but slight if any effect on larvas. In more dilute solutions its potency is practically *nil*.

Metallic copper has but little if any appreciable effect on the vitality or development of the mosquito larvas, when the extent of the area of copper exposed is in practical relation with the volume of water through which it is desired to exercise larvicidal influence.

DIGEST OF LITERATURE.

THE SURGERY OF THE LUNG.

BY

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It is an interesting fact that so late as 1903 the surgery of the lungs was considered novel and undeveloped enough a subject for two of the most eminent of European authorities to write a detailed monograph upon—if, indeed, the very excellent and classical work of Garrè and Quincke (Grundriss der Lungenchirurgie, 1903) should not rather be spoken of as a "textbook." This tardiness in the development of intrathoracic surgery is of particular note in view of the rapid strides made in the treatment of surgical affections *below* the diaphragm since the introduction of anesthesia, the development of pathology and the intelligent use of an aseptic technic; and the cause of the delay is worth considering.

The peculiar anatomical conditions which are essential to the physiology of respiration ultimately account for the late appearance of a surgery of the chest; for it is these that led to fear of surgical interference (pneumothorax) on the one hand and to the sorry results (due to peculiar conditions of healing, etc.) on the other.

The fear of a pneumothorax is an old one and arose, of course—aside from what had clinically been seen in the case of chest injuries, etc.—from the observation of results of opening the thoracic cavity in animals. Rapid, dyspnoeic respiration, cyanosis, a quick and weak pulse, these symptoms, ending in death, had only to be seen a few times to warn the surgeon away from the thorax. Yet the fear, Professor Garrè maintains (Grundriss der Lungenchirurgie) was an exaggerated if not a groundless one; and this contention he supports by ample clinical and experimental proof. The symptoms, he says, in the first place, are not due, as is so commonly stated, to the effect of atmospheric pressure on the intrathoracic vessels; they are due to the "floating" of the mediastinal pleural flap which, being sucked and blown forward and back when a pneumothorax is present, intrudes on the space of the functioning lung and so embarrasses its respiration. These symptoms may be prevented by fixation of the mediastinum; they do not occur when the mediastinal pleura is thickened or stiffened so that it cannot "flap"; and if the lung itself be fixed into the wound, by deep sutures passing well into the lung substance and attached to the thoracic wall, the operator may proceed without embarrassment. The acute symptoms of pneumothorax may, indeed, be successfully combated by grasping the mediastinal pleura with mouse tooth forceps or by pulling the lung itself well into the wound. It is, then, according to Garrè, perfectly possible to operate on the lung without fear, provided a "pneumopexie" be done; and he does not think it necessary to do a two-stage operation (preliminary suture of visceral and parietal pleurae) nor to attempt to provoke adhesions by any of the methods (injection of irritant, etc.) proposed—methods which, aside from being unnecessary, have proved inefficient and even dangerous. In cases where adhesions are already present it is of course obvious that the pneumopexie may not be necessary.

The attempt to make intrathoracic surgery possible by changing the surrounding atmospheric pressure so that a pneumothorax could not occur has led to the now famous Sauerbruch chamber. Just what the final fate of this operative procedure is to be is of course still a matter of conjecture. The very great difficulties to be overcome must be kept in mind if one is tempted to make any off-hand, sweeping criticism. It has, beyond doubt, been proved that human beings may be successfully operated in the chamber without the slightest symptoms of pneumothorax or any interference with their normal respiration. Professor Garrè himself has recently done a lung resection for probable actinomycosis and another for recurrent mammary carcinoma, both patients bearing the operations without the slightest respiratory disturbance. But the apparatus—one might better say "the plant"—required is elaborate and costly; the whole procedure is neither simple nor easy; and the surgeons like Garrè, who believe that lung surgery is perfectly possible "al fresco" have by no means been convinced that the negative-pressure chamber represents either a wise or a necessary outlay of money. Garrè does think, however, that hemorrhage is less annoying when one operates in the kammer than otherwise.

The work of Sauerbruch has led to a voluminous discussion as to the relative merits of the positive and the negative pressure methods for preventing pneumothorax. This discussion is prolonged by Tiegel in a 42 page polemic of the verbose and bitter kind in which the Germans revel (Sollen die operationen in der Brusthöhle unter Anuendung des Sauerbruch's chen Uberdruck—oder Unterdruck—Verfahrens ausgeführt werden. Berliner Klinik, November, 1905, Heft 209). The Uberdruck method—that is, the prevention of the respiratory effects of pneumothorax, where a pneumothorax exists, by increasing the intrapulmonary pressure (*i.e.*, by artificial respiration) rather than by decreasing the extrapulmonary pressure, as is done in Sauerbruch's Unterdruck method, has been advocated by many surgeons (Quénu, Longuet, Tuffier, Odwyer, among others); and Brauer (Die praktische Durchführung des Uberdruck verfahrens, Deutsch. med. W., 1905, No. 38, p. 1489) has given his approval to the method in the following words: "The socalled positive-pressure method of preventing the effects of an open pneumothorax is, as I have shown, theoretically of equal worth with the negative-pressure method proposed by Sauerbruch. The two methods fail equally to reproduce the physiological conditions; but the positive-pressure method is far and away the more practical of the two." Against the method, however, Sauerbruch urges (Zur Pathologie des offenen Pneumothorax, etc. Mitteilungen a.d. Grenzgeb. d. Med. u. Chir., Bd. 13, H. 3, 1904, p. 439) the following objections: 1. The alteration in the method of respiration. 2. The interstitial emphysema of the lung which follows the pumping of air into the lung. 3. The effect on the circulation. 4. The persistence of a pneumothorax when the artificial respiration ceases. 5. The great loss of body heat. 6. The greater danger of pleural infection from the extensive interchange of air in the pleural space. 7. The necessity of tracheotomy. 8. The difficulties of narcosis. This side of the debate Tiegel defends with ardor and reaches the following conclusions: "That the positive-pressure method falls wide of being the physiological equivalent of the negative-pressure method which is adapted in almost every detail to the physiological relations; that the positive-pressure method possibly involves certain dangers and that so long as these are not clearly understood, the negative-pressure method can alone come into question in extensive operations on human beings. I cannot admit the conclusion that the same physiological variations, which a healthy experimental animal bears without disturbance, can be expected to be tolerated by diseased human beings."

The danger of pneumothorax has not, however, been the only factor in the tardy development of lung surgery. Difficulties met with in the thorax and not elsewhere have discouraged surgeons from attempting interference in diseases of the chest and have made the results of such interference rather bad. These difficulties, as seen in purulent infections of the lung parenchyma, are stated by Garrè as follows: 1. There is usually more than one focus of infection. 2. Exact diagnosis of the location of the focus is difficult. 3. Abscesses of the lung often discharge by way of the bronchi. The result is that the patients, soon becoming accustomed to purulent expectoration, tolerate and become indifferent to their condition. The indications for opening lung abscesses being less urgent than in the case of other parenchymatous organs, such abscesses are allowed to heal spontaneously or else the patient comes late into the surgeon's hands. 4. Peculiar anatomical relations. Unless, as happens in exceptional cases, the lung tissue around the abscess is quite normal and the abscess itself is small, this neighboring tissue cannot follow the pull of the chest wall on the scar; and the defect, after operation, cannot be obliterated. In the case of the lower lobes the movability of the diaphragm, of the abdominal viscera and of the ribs are favoring factors.

What has surgery actually accomplished for diseases of the lung? Garrè, reminding us again how difficult it is to estimate the statistics correctly owing to the loose use of the word "improved" and the distressing frequency with which lung cases discharged as cured reappear with fistula, gives the following statistics: Of 400 cases of lung abscesses, gangrene and bronchiectasis, 300 were reported as "cured" by the pneumotomy. The mortality of the operation was 25 percent. In how many of these cases the "cure" was permanent it is impossible to say from the literature. Garrè's own experience leads him to believe that in the *acute* cases (gangrene and acute abscesses) one may practically always expect permanent cure. The prognosis is less favorable for gangrene than for abscess. For bronchiectasis the reported percentage of cures he found to be 60 percent; but these "cures" were not always definitive Of 47 cases of lung tuberculosis surgically treated 26 showed marked improvement or "Stillstand" of the tuberculous process. In actinomycosis the prognosis is decidedly bad, but there are four cases in the literature reported as cured.

Mackenzie (Pulmonary Abscess and Gangrene, Montreal Medical Journal, July. 1906) after commenting on the unfavorable results obtained under medical treatment (80 percent mortality) reports six cases of gangrene of the lung treated surgically. One of these cases improved, only to die suddenly one month after operation from erosion of a pulmonary artery. The other five left the hospital well and the three from the author's own practice are still well (no late report on the other two). This is a most gratifying result as at least two of these patients were in a most desperate condition. Sir William Macewen (The Cavendish Lecture for 1906) reports the remarkable case of a man with a large tuberculous abscess involving practically the whole of the left lung. The abscess was evacuated and a thoracoplasty subsequently done. His general health improved, the rales disappeared from the right lung and the man was able to walk about and enjoy life. It is now 11 years since the operation and the patient has never been ill since. He has been regularly at work, supporting his wife and child, and states that since the operation he has walked 10 miles without fatigue.

Tiegel (Zur Technik der Lungennaht, Münch. med. Woch., No. 46, 1905) reports experimental work on lung suture and recommends a technic found efficient in his work. In order to make use of the coagulation of the blood to stop up the puncture holes made by the needle in laying the stitches, silk saturated with iron chlorid was used. The size of these puncture holes was also diminished by using needles without the ordinary eye but provided with a small funnel shaped cap which fit on the needle and into which the suture was placed. Sutures laid in the ordinary way were found to tear through the lung tissue. To overcome this difficulty two "scaffold threads" were placed deep in the lung, one on either side of the incision and parallel to the surfaces to be approximated. The sutures were then passed around these and when drawn and knotted they no longer tore out. Better results still were obtained when magnesium wire was used for the buried, scaffold stitches. The method is recommended for suture of the liver, spleen, heart, pancreas, gravid uterus and other friable tissues.

Sir William Macewen (Cavendish Lecture) deals at some extent with the physiology of respiration in explaining the occurrence and nature of traumatic pneumothorax. He believes that molecular cohesion and capillarity are the principal forces at work in maintaining the expansion of the lungs, and that when collapse of the lung does take place these forces can be brought into play so as to produce reexpansion. The current belief even now is that the moment air enters the pleural cavity the lung not only collapses but does so absolutely even to its hilum, and that it remains permanently collapsed. Therefore the opening of the pleural cavity is considered so dangerous that it is eschewed. Whatever effect atmospheric pressure within the chest may have in aiding expansion of the lung it is clear that it is not the only factor if, indeed, it be the chief factor in maintaining such expansion. Experience shows that the lung is maintained in full expansion by the molecular cohesion existing between the two serous surfaces of the pleura, and the capillary attraction exerted by a thin layer of serous fluid existing between the two moist membranes. It is evident from this that Macewen's suggested treatment for pneumothorax is the reproduction of the lost cohesion between the two pleural layers; this is brought about by firm pressure on the chest and the diaphragm. The primary shock of pneumothorax Macewen thinks due in part to the lung compression and the impairment of the interchange of gases; but the immediate and direct effect which the shrinkage of the lung produces on the heart he thinks an important factor.

Consolidation of Medical Journals.—January 1, 1907, the *Therapeutic Gazette* will absorb the *Medical Age*, and *Medicine*.

The incomes of physicians in England have decreased 25 percent during the last three years, according to recent statistics.

DERMATOLOGY: A REVIEW OF RECENT LITERATURE.

BY

S. H. BROWN, M.D.

Ochronosis.—One of the most interesting of the more recent clinical reports in medical literature is that in which L. Pick (Berliner med. Woch., Nos. 16, 17, 18, 19, 1906) describes in detail a case of the very rare condition known as ochronosis. The report also includes references to all the cases previously reported thus making a valuable contribution to medical literature in general. We learn, consequently, that up to this writing, only eight cases including Virchow's celebrated case, had been placed on record. In all of these the changes were more or less uniform, and the pigmentation was noted to be most intense in areas surrounding bloodvessels. As a rule, the pigmentation was diffusely scattered throughout the tissues, but occasionally it was found in granular groups. Pick's case occurred in a woman, 77 years of age, suffering considerable debility, which he is disposed to allude to as marasmus senilis. She was also the subject of ulcerations on the thighs, and arthritis. The ochronose condition was manifested by a deep coffee-brown discoloration of the skin of the face; the lips were marked by brownish patches, the ears were steel-blue in color and the hands were of a dark steel-blue hue. The pigmentation of the ears had started 16 years previously, and had progressively become darker; the pigmentation of the face and hands was only of four years' duration. The other portions of the body were free from pigmentation. The patient's health was such that she did not survive very long and the opportunity to perform a necropsy was used to an advantage. His report of the findings at autopsy is extremely full and well worthy of careful perusal. After a lengthy dissertation on the various features of this and other cases, especially as to the morbid physiology of the disease, he summarizes the results of his investigations as follows: Ochronosis is a special form of melanotic pigmentation, which is chemically in close relation to melanin. This dissolved pigment and its precursor, circulating in the blood, is imbibed diffusely in the cartilages and cartilage-like structures, loose areolar tissue and its cell elements, and smooth and striped muscle cells, without in the least weakening the cells. In degenerated parts, the intensity of the pigmentation is naturally much greater. The pigment is usually diffuse but may become granular secondarily; both forms are microchemically iron-free; sometimes fat is present. The variations in coloration of the superficial portions of the ochronosed parts is merely due to optical interference as the result of the structure of the tissues. The ochronose melanin originates from the aromatic kernel (tyrosin, phenylalanin) of the albumen and its related hydroxylized products with the influence of tyrosinase. This can be exogenous, by the application of phenol for a number of years, or endogenous in the presence of tyrosinase, which converts the alkapton acids in the alkaptonuric or other intravital autolytic hydroxylized products from the homocyklic aromatic complexions of the albumen molecule. This intravital autolytic cell degeneration in itself may be caused in various ways, senility, gouty or rheumatic diathesis, etc. The ochronose pigmentation affects the external parts in a rather extraordinary manner. This pigmentation forms a macroscopic pathognomonic sign of ochronose, so that its affection may be diagnosed in the living subject. In some cases of ochronose, the pigment material or its precursor, is voided in the urine (ochronose melanuria). In such cases, the urine after standing darkens spontaneously as a result of oxidation. The kidney can also take part in this pigmentation rather extensively, resulting in diffuse pigmentation of the parenchyma, in precipitation of granular masses in the lumen of the tubules and epithelial cells, and the formation of macroscopic cysts with dark contents. Beside this, there also arises ochronose secretion cylinders diffusely colored and containing intensely ochronose pigmented kernels, although the diffuse coloring may be absent. In those cases of ochronose, in which only the internal organs are affected, the finding of an ochronose cylinder will be of great value, as it will be a microscopic-clinical-pathognomonic sign of ochronose of the internal organs without any external pigmentation, as in melanuria or alkaptonuria.

Mitin.—E. Schwarz, Prague (Medical Press, August 1, 1906), reviews the subject of ointment bases, and concludes that the one recently introduced by Jessner fulfils all the requirements of an ideal base. The disadvantages of those commonly in use are enumerated and compared with mitin which up until now has been found to be devoid of any by these observers. According to the rather vague description given it would seem that mitin was a mixture of lanolin, glycerin, egg, milk, and other fats, in varying combinations. It is manufactured in three forms—mitinum purum, cosmeticum, and paste. Criticism, favorable or otherwise, is reserved, since the formula seems to be enveloped in secrecy.

Rectal Mercurialization.—Every little while in perusing the columns of the medical press, we are struck by instances in which the monotony of conventional therapeutics has begun to wear upon some one and as a result of an unreined ingenuity the profession is presented with a new or modified plan of treatment in response to some not well-determined indication. As an example of this may be mentioned the plan recently advocated by Audrey (Annal. de Dermatol. et de Syphil., 3, 1906) in which he treats syphilis by the introduction of mercury into the rectum. Doubtless the results attending the treatment were all that could be desired, since it has long been determined that some absorption takes place in that structure. But why go out of one's road to employ a slow, by no means certain, and at best varying plan of treatment in a disease such as this just for variety's sake! In justice to Audrey, it may be remarked that his report covered 30 cases and his results were extremely satisfactory to him. In adults he employed suppositories containing .03 gram of mercury, and in children he used .015 gram of mercury. He also notes that a three and a half year old child was given nightly such suppositories, for a hundred successive nights without ill-effect.

Parasitic Skin Diseases.—In a clinical lecture, recently delivered, Jonathan Hutchinson (Medical Press, August 15, 1906) reiterates his former contention, that the various forms of the disease known as urticaria, are very often due to flea bites. Not content with this startling assertion he further claims that prurigo urticaris, lichen urticatus, urticaria perstans, and urticaria pigmentosa are the result of nothing but flea bites or bug bites. Doubtless some eruptions of this character are directly traceable to a parasitic cause, but in assuming that the etiology is always of this nature Mr. Hutchinson stands somewhat alone. He unconsciously shows that these parasites are more common in London than would be supposed. It would seem, from a careful reading of this paper, that he rests the burden of proof of this view of the subject on the fact, that the lesions in the numerous cases observed by him disappeared when the patient was removed from the original environment. This could also be the sequence of events in the case of urticaria and kindred disorders. The tremendous experience of Mr. Hutchinson entitles this statement to considerable credence, much as it seems to run counter to accepted teaching.

The High Frequency Spark in the Treatment of Premature Alopecia.—G. M. MacKee, New York City (New York Medical Journal, July 28, 1906) in a paper on this subject speaks very favorably on this mode of therapy. He refers especially to those cases of alopecia in which the various wellknown treatments have been employed, but without very marked improvement. Great stress is laid upon the necessity of producing the proper degree of hyperemia of the skin in order to restore the scalp to a normal condition of hair production. This he finds is best accomplished by exposure to high frequency currents. The beneficial action of the high frequency spark, he states, is twofold, both stimulating and bactericidal, and may be summarized as follows: Its prime action in alopecia rests in its power to produce a vasomotor dilation, causing a physiological hyperemia lasting several hours. This hyperemia is mainly caused by the action of the actinic rays upon the vasomotor nerves. Their action is materially enhanced by the severe electrical bombardment and also by the heat effects. The bactericidal effect is produced by the actinic rays, by the heat effects, and also by the production of large quantities of ozone, the latter of which he believes penetrates the scalp to some extent. In regard to technic, he states, the unipolar discharge from any of the ordinary high frequency outfits as supplied with röntgen-ray coils may be used, but the Piffard hyperstatic transformer is to be preferred, because for this purpose it may be actuated by either the static machine or the Ruhmkorff coil. In cases where a hyperemia is produced by a mild treatment it is preferable to use the transformer in conjunction with the static machine, as the treatment is less disagreeable, and the undesirable heat affects are much less marked. The electrode should be attached to one of the terminals of the secondary coil of the transformer, and the strength of the current regulated by the static spark gap. With an eight or ten plate machine running to full capacity it is usually possible to employ a spark gap of one inch. If the gap is too long the effluve from the electrode tends to condense into a heavy spark which is unpleasant to the patient and is not productive of the desired results. In cases where the hyperemia is not readily produced by this method it is desirable to attach the transformer to a coil. This may be accomplished by connecting the chains, which are attached to the Leyden jars of the transformer, to the coil terminals, and reducing the spark gap to about one-fourth to three-fourths of an inch. If preferred, the spark gap may be placed between the Leyden jars and muffled by means of glass. Any interrupter may be used, with about from two to seven amperes through the primary. Although the effluve is much less when the transformer is used in connection with the coil than with the static machine, the sparks are very much stronger, and a reaction is obtained very quickly. With the static machine it usually requires from five to ten minutes to produce an active hyperemia, while the same result is obtained in less than half the time with the coil. To obtain the best results, he advises, that two or three seances should be given each week. While applying the spark the electrode should be kept in contact with the hair and in motion, so as to avoid the heat effects which are strong enough to burn the hair if allowed to remain stationary for several seconds. MacKee gives the histories of nine cases in which he employed this treatment with extremely encouraging results.

Röntgen Ray in Ringworm.—Reports are still forthcoming as to the highly beneficial effects of this agent in the treatment of the exceedingly troublesome affection, ringworm of the scalp. Saboraud (British Journal of Dermatology, June, 1906) whose work in this field is monumental, has followed up his earlier reports as to the value of this treatment by a detailed account of its use at the Municipal Laboratory of the City of Paris at the Hospital of St. Louis. The magnitude of this work may be conceived when it is remembered that this experience covered about 4,000 cases annually. He employed a static machine of 12 discs of 75 cm. diameter at a speed of 950 revolutions a minute, driven by a dynamo of three-fourths horse power. In the circuit between the condensers of the static machine, and the two poles of the tube, is interposed a spinter meter, the separation of which measures the spark in centimeters, and the resistance inside the tube to the current which traverses it. A small self-regulating tube of only 8 cm. diameter is employed. The tube is surrounded, at a distance of 3 cm. from its wall, by an incasement or shield of strong sheet iron lined on its inside by a thick layer of insulating ebonite. This covering is open on the side that does not give out röntgen rays. On the other side opposite the point of emergence of the röntgen ray, this covering is pierced by a hole to which is adapted the whole series of localizers. The localizers are metallic cylinders, all of the same length but of different diameters. In his experience the quality of the ray makes very little difference, the quantity is the only point of importance.

He uses extremely hard tubes, making 10 to 12 on the radiochromometer of Benoist. In this way the period of exposure is reduced to six or seven minutes. The pastiles invented by him he still uses with success in measuring the röntgen rays. American workers in this field have been less fortunate in their results with these pastiles, possibly through faulty technic. One exposure is usually sufficient in cases of ringworm, and about 15 days later the hair falls out. Three days later the head is washed with soap and water. and thereafter daily until the thirty-fifth day when the disease area should be entirely bald. A ten percent solution of tincture of iodin in 80 percent alcohol should be applied to the scalp daily from the first day of the operation. After a period of about four months the hair is entirely renewed.

Dermatoses and Dry Climate.—J. M. Blaine, Denver, Colorado, has noted in an experience extending over 11 years in Colorado, that the dry climate of that region has a direct influence on certain skin diseases. Eczema, for instance, is manifested most frequently in the dry form, erythematous and papular eczema being most common. Acne is more common than on the coast but it yields to treatment comparatively quickly. Psoriasis is likewise more frequent than in sea-level districts and is more difficult to treat. Pustular conditions are comparatively uncommon. Lupus erythematosus is rather frequent but is favorably influenced by treatment. Lupus vulgaris is rare, and the cases seen are usually imported. Epithelioma and other degenerative conditions are common. Alopecia areata is also common. Leukoderma is likewise seen rather frequently. Diseases of the sweat and glands are rare. Urticaria, erythema, hypertrichosis, and pruritus are frequent conditions.

Dermatology as a Field for Original Research.—M. B. Hartzell, in an address before the American Dermatological Association (Journal of Cutaneous Diseases, September, 1906) emphasizes the importance of this branch of medicine as affording an unlimited field for the pursuance of scientific research. To quote his own expression, no other tissue of the body offers such extraordinary opportunities for the study of morbid processes in general as the skin. It is always possible to obtain what is practically living material for microscopic study, to observe the progress of disease from day to day, even from hour to hour, a feature that distinguishes this structure and its diseases from all others, excepting the eye. Hartzell considers that certain aspects of the cancer problem belong within the sphere of dermatology, and mentions the close relation of hyperkeratosis and hyperpigmentation, not uncommon skin affections, to carcinoma. The former, he states, is often a true precancerous affection, and the latter is frequently associated in some unexplained way with extreme malignancy. Further along in his discussion of the subject, he voices the opinion that the many and complex problems of immunity would probably receive some illumination from a carefully conducted study of the complete or partial local immunity frequently observed in certain skin diseases. As an example of this immunity in cutaneous affections, he mentions the fact that in circinate eruptions, when two circles meet, they disappear at the point of contact. This being so commonly the case in psoriasis he believes that it suggests a parasitic origin of the disease. He notes also, in his discourse, the infrequency with which new lesions of syphilis occur on the sites of remote ulcerative syphilides. Another point of interest to which he alludes, is the antagonism occasionally observed between general diseases and diseases of the skin, and quotes two cases, in one of which, trichophytosis of the axilla disappeared spontaneously during an attack of typhoid fever and returned when the patient regained his health; in the other the disappearance of psoriasis during the course of a general disease. This antagonism and the commensalism sometimes observed in cutaneous and general diseases he thinks, would also repay serious study. The necessity of more scientific data in connection with action of drugs upon the skin is also dwelt upon, and it is hoped that this able address will be the means of awakening the dermatological world from its peaceful repose to a sense of its responsibilities. Certain it is the field is there and doubtless an array of its possibilities such as this will be the means of stimulating work in this direction.

Technic of Intramuscular Injections for Syphilis.—W. S. Gottheil (New York Medical Journal, June 30, 1906) advocates the intramuscular injection of insoluble mercurials in obstinate cases of syphilis, and states that this treatment has proved satisfactory and successful in the hands of almost all who have tried it. Its application is indicated, according to this observer, in syphilis of the glands, bones, and internal organs, in the most obstinate and relapsing manifestations of the infection on skin and mucosas, in the earliest and latest lesions, as well as to the routine treatment of a regular and mild case. The solution he employs is a ten percent (by weight) solution of the salicylate of mercury in liquid petrolatum. The salicylate contains about 59 percent of metallic mercury. Each drop of the solution contains 0.1 of a grain of the salicylate; ten drops equal one grain of the drug, or half a grain of metallic mercury. Any ordinary hypodermic syringe may be employed but he thinks it best to have one especially prepared for this purpose. The instrument should be heavy, so that the long needle can be thrust with the greatest rapidity through the skin and into the muscular tissues. The attachment of the needle is of great importance. It should be fitted with slip joints, permitting of instantaneous connection and removal. The barrel of the syringe should be of glass but the rest of the instrument should be of metal to give the necessary weight. The needle should be long enough to reach through the skin and subcutaneous tissues even of stout people, so that the injection fluid can be deposited in the depths of the gluteal muscles. The injection fluid is sterilized by placing it in small bottles, which are then placed in water which water is then brought to the boiling point and maintained there for an hour. The bottles are then sealed. The syringe may be sterilized by removing the oil with ether and alcohol, boiling and drying. The tip of the instrument, the only portion liable to contamination, should be passed through the alcohol flame a few times before using. The needles should not be boiled but instead should also be passed a few times through the flame, not heating them enough to destroy their temper. The skin of the site selected, usually the gluteal muscles, is prepared in the usual manner with green soap and water and then with alcohol and then covered with a pledget of sterile cotton.

RECENT EDITORIAL OPINIONS.

Journal of the American Medical Association.—The Physiologic Standardization of Drugs: It would be a mistake to make official assays compulsory but the introduction of official standards to which must conform such preparations as are simply marked "physiologically assayed" could meet with no objection. It is to be hoped that the next pharmacopeial convention will deal with this question as its importance demands, but this means ten years hence; the matter is too pressing to be shelved for that time. As to what body should take the initiative is a delicate question but it appears that the hygienic laboratory of the United States Public Health and Marine-Hospital Service is best adapted to this work.—The Desmoid Reaction in Gastric Diseases: This reaction has several advantages over the use of the stomach tube. But though a valuable adjunct to the ordinary examination it is not likely entirely to replace the latter. One fault is that it does not show when an excess of acid is present. Evidently it cannot take the place of the ordinary examination in hyperchlorhydria.—The Migratory Needle Story: Newspapers occasionally print remarkable stories of the migration of needles in human bodies. Many of these are sensational rather than truthful accounts but it would be well to know from a scientific standpoint just how far the migration of small sharp objects is possible. The statements of ignorant patients cannot be accepted. The subject presents a chance for studies in suggestion and psychology as well as in surgery and physiology and deserves more accurate attention than it has previously received.—Flat Residence and Insanity: It has been stated that a large proportion of cases of insanity in women in cities is due to their living in flats. It is probable that this, as well as living on farms, has been overrated as a cause but the possibility of evil in the great extension of the flat system cannot be denied. The fact is that the greater portion of insanity is already coming from the cities and the flats form only one of the contributing factors.—The Intestinal Origin of Pulmonary Tuberculosis: It must be concluded that experimental work strongly favors the conclusion that pulmonary tuberculosis, in the vast majority of instances, takes place through the respiratory rather than the alimentary tract. For the present we must assume that inhalation tuberculosis is the common form of pulmonary tuberculosis and must take the precautions necessary to avoid this means of infection.—Prevention of Cancer: Even though cancer has not been proved to be parasitic and hence contagious it will do no harm to regard it as such if this view will lead to greater precautions in cancer cases. We have little or no direct evidence to connect cancer with food and until there is such there is no reason for discarding such articles of food as suggested by Keetley. The plan of action suggested by the Committee on Cancer of the Uterus at the latest meeting of the association offers to the profession of this country the best means of combating this fatal disease.—Night Working: An increase in the tendency to invade the natural hours of sleep is noted by the action of commercial enterprises in keeping a force of hands at work nights to receive and deliver orders early in the morning. This will not only be a detriment to the workers but will add to the nervous strain of employers. It is doubtful if pressure by those interested in public hygiene will curb this tendency.—PUERPERAL FEVER AND THE MONUMENT TO SEMMELWEIS: Hungary has erected a monument to Semmelweis in memory of his work in the prevention of puerperal fever. The question as to why America should not thus honor Holmes has been raised. Holmes presented only arguments drawn from literature while Semmelweis added the demonstration of clinical facts, but it is fitting that we should honor the leaders of thought as well as those who demonstrate truth by experience.—INSURANCE EXAMINATION FEES: The committee of the association has presented facts on this question and left it for States and counties to decide. The question at issue is purely a financial and commercial one but back of it all is really something more than dollars and cents. Combinations of men and capital put a price on the physician's services and he has nothing to say. The fundamental question is, shall physicians continue to act individually and humbly accept what is offered them, or shall they unite and be in a position to demand what is due them?—IMPROVEMENT IN FOOTBALL PATHOLOGY: In the season just ended there has been a decided improvement in the pathologic aspects of the game. Football has not claimed so many victims as last year though there are still some features to be improved. It would seem necessary to modify the game further in the direction already begun. If as decided improvement takes place in the season of 1907 there will be left little room for complaint.

Boston Medical and Surgical Journal.—HISTORY OF THE HARVARD MEDICAL SCHOOL: The history of this school has recently been issued in the shape ot a volume of over 200 pages. During the century and a quarter of its existence, 22 separate socalled departments have developed, a striking example of the expansion which medicine has undergone. —MILK INSPECTION: The milk situation is one of perennial interest and the problem is being solved apparently in a satisfactory manner. In general the situation is one of promise. As to the producer knowing whether or not his milk is contaminated, he cannot be an expert bacteriologist but he can strictly observe the health of his stock and send no milk from questionable animals. He should also be impressed with the importance of cold in lessening bacterial growth.—NURSES IN THE SCHOOLS: A report of a school committee contains the statement that theoretically Boston has the best school inspection in the country, but in practice the medical inspection is poor. The question of nurses to supplement the work of physicians is under discussion. The only justifiable argument against their employment is the added expense. A substitution of nurses for physicians might well be undertaken as the former become more proficient. Physicians must be the final court of appeal but intelligent women could do most of the work now done by the former and thus lessen the burden of the taxpayer.

Medical Record.—THE MEDICAL LICENSE LAW IN NEW YORK: The solution of the problem of uniform medical laws rests with the practitioners in each State. If they will interest themselves in this question and use their influence to obtain amendments to the present laws, the time will come when all States will have practically equal requirements. New York, as the largest State, ought to establish a standard but its present laws must first be amended in several ways. There should be but one examining board; the law should define in what consists the practice of medicine; and it should make provision for the punishment of offenders against the law.—A FRESH VIEW OF THE CANCER PROBLEM: Fischer's results from the use of scarlet-R indicate that there may be in the body certain principles possessing the faculty of inducing the proliferation of epithelial cells. These he calls "attraxins." Ehrlich has reached somewhat similar conclusions. Fischer has opened a new line of cleavage and if his own views prove untenable, the process of refuting or confirming them will likely bring to light other data of importance.—THE DIAGNOSIS OF RABIES: Recent work in the New York Department of Health indicates the extreme probability that the Negri bodies are protozoa and the cause of rabies. A new method requires but 20 minutes for diagnosis. The Board of Health is to be at once notified of any suspected mad dog shot by a policeman and will secure the carcass. In case of a positive diagnosis the police will notify all persons that have been bitten.—INTESTINAL DISINFECTION: Intestinal antiseptics apparently work in opposition to the natural defensive efforts of the organism. It would be worth while to follow recent suggestions to combat intestinal infection by introducing normal bacteria or providing suitable conditions for the further development of harmless bacteria already present. Intestinal antiseptics have not been generally successful and serum treatment, though giving encouraging results, has not placed intestinal therapeutics on a firm and practical basis.—THE USE OF ALCOHOL IN PNEUMONIA: Fock, by sending questions to many men, is able to present an interesting review of current opinion in Europe on this subject. The majority consider that alcohol should be given only in selected cases of pneumonia. The whole inquiry shows lack of uniformity of opinion and does not help a great deal toward the solution of the problem.—ABDOMINAL FAT NECROSIS: Recent investigations have shown that crushing injuries of the pancreas are followed by extensive fat necroses and that these are due to embolism of the pancreatic cells. This furnishes another satisfactory explanation of the phenomenon and is of practical importance. As undue manipulation of the organ is thus proved to be dangerous, greater care must be exercised in handling the pancreas during operation in its vicinity.

New York Medical Journal.—NEGLECT OF THE FUNDAMENTAL BRANCHES IN MEDICAL STUDY: The Pennsylvania medical examiners have called attention to the large percentage of failures in anatomy, physiology, chemistry and pathology. The main reason for these failures is the attitude of the student toward those branches. He does not consider them utilitarian and in this is encouraged by the attitude of many practitioners. Instructors in these branches are usually hardworking and underpaid men who are also compelled to do research work and are apt to teach things beyond the fundamentals. Research and the instruction of undergraduates should be kept apart.—ABORTIVE SYPHILIS: A curiosity of syphilology but one that has a practical bearing is the disappearance of an initial lesion without being followed by constitutional symptoms of the disease. This forms an argument for postponing antisyphilitic treatment until constitutional symptoms appear, for if they do not occur within a number of months one is sure the patient is no longer syphilitic.—PARALEPROSY: The prefix para seems to be encroaching on the domain of the time honored pseudo. The latest addition to the list is paraleprosy, applied by Hirschbburg to an abortive form of inherited leprosy. It generally does not declare itself until the child is three to five years of age. The manifestations are general nutritive and developmental disturbances, keratoses of the skin, thickening of nerves, changes in the teeth and nails, anesthesia and modifications of the shape of the nose.—FANATICISM AND THE SENSE OF HUMOR: The International Antivivisection Council has erected at Battersea, England, an expensive drinking fountain in memory of a dog said to have died as a result of vivisection. The people who erected this cannot have the slightest sense of humor. Medical students said to have threatened the destruction of the monument also lack in the sense of humor or they would see that the memorial is the best possible evidence of the lack of common sense of those who erected it. Allowing it to stand will best work their confusion.—WOMEN NURSES FOR INSANE MEN: Recent discussions appear to indicate that the increasing difficulty of obtaining proper male nurses for the insane will tend to promote the more extensive employment of women. Many male nurses go from one institution to another looking for a 'job" rather than taking interest in the work and caring for instruction. One writer believes that women should be in charge of most classes of insane with subordinate male attendants for certain services.—AGE LIMITATIONS OF SPORT: Discussion in periodicals with suggested limitations of certain sports cannot fail to be of interest to physicians. Thirty is considered the age limit for football, 40 for cricket. There is difference of opinion, however, and still more so regarding truly American sports. Forty is about the limit for baseball but many players are beyond this. For tennis the age runs to at least 50 and golf is preeminently the game for those of middle age and beyond.

The Lancet.—THE STANDARDIZED STAIRCASE: A system of standards is the order of modern life but there are still some directions in which standards are needed. One is the steps of stairs which in very few houses are alike and even the steps in each staircase are often uneven in height. To the aged and infirm this is a source of terror. There should be uniformity in height and breadth of steps, with room enough on them for the whole foot from toe to heel.—LIMITATION OF ENGLISH FAMILIES: Mr. Webb has discussed with great ability the decline in the birth-rate and specifies certain aids for making it easier for people to undertake family responsibilities. Among these are free medical attendance at parturition, gratuitous supply of milk for infants, free meals for nursing mothers, feeding of children at school, and multiplication of scholarships. The unwisdom and even the impossibility of his suggestions, admitted by himself to be revolutionary, are apparently established. Not because they tend toward socialism but because they are utterly incompatible with true progress and with the welfare of society.—"The Profession" in Public Estimation: Sir Dyce Duckworth in a recent address states that medicine is not nowadays regarded with the respect due it. In part the medical man, in part the public is to blame for this state of affairs. The former is not so well educated previous to studying medicine as he used to be. He hurries into the profession, after gaining what is necessary, to make money, neglecting those things which evoke and refine the taste. The public is feverishly enamored of novelty in medicine as in other things and tends more than formerly to popular cures, sensational exploits, and even to pure quackery. Sir Dyce Duckworth suggests no remedy but has done a service in pointing out the true state of affairs.

Surgery, Genecology and Obstetrics.—Endowment of Medical Colleges: Along with the change from proprietary schools there have been such radical changes in the scope and methods of instruction as to render the income of the schools from fees wholly inadequate. Endowment of medical schools is necessary as in other colleges in order that our youth be well educated. Gifts to medical schools and to research institutions are of greater value to the race than are those to hospitals alone; the former teach how to prevent disease, the latter care only for the victims of disease. Members of the medical profession have the rich and well-to-do under their care and can reach them personally; it will be their own fault if endowment is not secured.

NEWS AND NOTES.

Yellow Fever in Cuba.—The situation is not regarded as serious, in spite of the fact that new cases of yellow fever are still appearing in and about Havana. The results of the mosquito-killing campaign, instituted a month ago, will soon be evident, as that 30 days is about the minimum of time in which the effects of the prophylactic measures become apparent.

International Congress on Tuberculosis.—Notices were sent to many physicians throughout the United States and appeared in the medical and public press regarding an "American International Tuberculosis Congress" held in New York City, November 14 to 16, and an association known as "The American Antituberculosis League," which is to meet in Atlantic City next June, at the time of the meeting of the American Medical Association. It should be stated that the gathering in New York in November and the one in Atlantic City next June have no connection whatever with the International Congress on Tuberculosis, authorized at the last session in Paris in 1905, which will hold its next meeting in Washington in 1908, under the auspices of the National Association for the Study and Prevention of Tuberculosis.

Fatal Inoculation Through Mixing of Test-tubes.—The very promising experiments in the production of an anticholera serum, that have been conducted in Manila under the supervision of Dr. R. P. Strong, chief of the government laboratories, and carried on under the authorization of the Philippine Commission, have met with an unexpected check in the death of ten of the 24 native prisoners in the Bilibid jail, who were being experimentally inoculated. It is reported that tubes containing plague germs and others filled with cholera serum were mixed in the laboratory of the Bureau of Science by a visitor who examined the plague germs, and by mistake placed them in a rack with the serum tubes. This is said to have occurred during the temporary absence of Dr. Strong, who has been conducting experiments and inoculating of persons with cholera serum to test its efficacy. Much protest was aroused in the Filipino press over the affair, and Governor-General Smith has appointed a special committee to investigate the deaths, and for the time being has revoked the authorization to perform experimental inoculations.

The Mississippi Valley Medical Association.—The annual meeting was held at Hot Springs, Ark., November 6, 7, and 8, 1906. The following officers were elected: President, H. Horace Grant, M.D., Louisville, Ky.; First Vice-President, G. A. Hebert, M. D., Hot Springs, Ark.; Second Vice-President, T. C. Witherspoon, M. D., St. Louis, Mo.; Secretary, Henry Enos Tuley, M.D., re-elected, Louisville, Ky.; Treasurer, S. C. Stanton, M. D., re-elected, Chicago, Ill. Columbus, O., was selected as the next place of meeting, during October, 1907. It was voted at this meeting to offer a prize of $100 to members of the association for the best essay recording some original research work in the Mississippi valley. A committee of three was appointed who will formulate rules of the contest, which will be published later.

Ex-Governor Alonzo Garcelon, known for years as the "Grand Old Man" of the American medical profession, of Lewiston, Me., died December 8, at the home of his daughter, at Medford, Mass. He was born in 1813, and was graduated from Bowdoin College in 1836. He studied medicine at Dartmouth Medical School and at the Medical College of Ohio, graduating from the latter. Immediately he began the practice of his profession in Lewiston, and continued until recently. He served in both branches of the State Legislature from 1853 to 1857, and in 1871 was mayor of Lewiston. In 1868 Garcelon ran for Congress, but was defeated. In the election for governor of Maine in 1878, no candidate polled a majority, and the Legislature elected Garcelon to the office, which he held until 1880. During the Civil war, Mr. Garcelon acted as surgeon-general on the staff of the governor of Maine. He served years as trustee of the American Medical Association, and always stood high in its councils.

Patent medicine traffic in England amounts to nearly forty millions of packages, representing an outlay of nearly three millions of pounds sterling.

Philadelphia's Health Budget for 1907.—Director Coplin's budget for 1907 totals $956,722, which is about $100,000 in excess of the budget for 1906. This budget provides for the erection of a municipal ice plant at a cost of $45,000; for the enlargement and improvement of the nurses' home; and for alterations and refurnishing, for the use of the department of tuberculosis, of the wards formerly used by the department of neurology of the Philadelphia General Hospital. Director Coplin recommends that the force of cattle and meat inspectors be increased from six to twenty-five. An assistant chemist is also recommended for the Bureau of Health.

Dental surgeons for the army are difficult to obtain. The examination of candidates recently held at West Point resulted in the reporting before the examining board of only four of those who had been authorized to appear. Of these four, three were physically disqualified and one withdrew from the examination. Nothing has been heard of the examination held at the same time in San Francisco.

Systematic training of enlisted men in athletics is considered most desirable and another effort will be made this year by the Surgeon-General of the army to introduce individual instruction instead of general athletic work. This idea contemplates the application to the enlisted force of the army of the same system of physical culture which exists at the military academy.

European Longevity.—German statisticians who report the result of recent investigations say that the German Empire, with a population of 55,000,000, has but 78 persons who are more than 100 years old. France, with a population of fewer than 40,000,000, has 213 who have passed their hundredth birthday. England has 146, Scotland 46, Denmark 2, Belgium 5, Sweden 10, and Norway, with 2,300,000 inhabitants, 23. Switzerland does not boast a single centenarian, but Spain, with about 18,000,000 population, has 410. Servia has 573 persons who are more than 100 years old, Roumania has 1,084, and Bulgaria 3,883. In order words, Bulgaria has a centenarian for every hundred of its inhabitants, and thus holds the international record for old people. In 1892 there died in Bulgaria 350 persons who had lived for more than a century. The death of Jean Mignot, of Montpont, who was probably the oldest Frenchman, has recently been reported as occurring at the age of 107 years.

Rat-catchers to Protect Health in Manila.—A few months ago great numbers of plague-infected rats were found in Manila, and since then a large body of professional rat-catchers have been hard at work to protect the city's health. It was evident that the plague rats infected only two sections, and in both of these districts a thorough disinfection was at once undertaken. Every house was systematically cleaned and all the habitual abiding places of the rodents, such as wood piles, were removed.

The Nobel prize for medicine has gone this year to Professor Ramon Y. Cajal, of Spain, and to Professor Camillo Golgi, the rector of the University of Pavia, the first Italian to receive one of these prizes. Professor Golgi was born in 1843, in Brescia; his father was a physician, and the son was educated at the Pavia University, where he also began his career as assistant in the laboratory for experimental pathology. He devoted himself to histology, and in 1870 he discovered a new way of coloring the substance of nerves with the aid of nitrate of silver, by means of which it became possible to ascertain the relations between nerve fibers and cells. Thenceforth he devoted much of his time to the study of malaria. He traced the development of the microscopic parasites, and discovered the reason why malarial fever is intermittent. By persistent experimenting he discovered the best method of administering quinin as a remedy and preventive.

INDEX.

Abdomen, penetrating wounds of, 193
Abscess—brain, 382; hepatic, 261
Achylia gastrica, 273
Acid, boric, alleged dangers of, 2
Address, presidential, Lankester's, 357
Adhesions, postoperative, prevention of, 481
Adrenalin, acute glaucoma following use in cataractous eye, 204
Adversity, sweet uses of, 452
Advertising—disreputable, check of, 352; newspaper, 450; scheme, professor's new, 236
Advertisements, nostrum, defacement of nature by, 290
Advice, pernicious, from a cabinet officer, 293
Afflicted, pauperization of, 178
Age—and faculty of acquiring knowledge, 48; and rate of growth, 47; limitation of sport, 566
Air—heated dry, in tinnitus aurium, 489; outdoor, moderate exercise and, 232
Albuminuria and menstruation, 233
Alcohol—1; and milk in hospitals, 444; in pneumonia, use of, 566; question, the, 445
Alien Act, new, in Great Britain, 46
Amebas, significance of, 521
America—forcing process in, 107; medical mortality in, 152; organization of medical profession in, 173
American—and British Medical Associations, comparison of recent meetings of, 445; doctor of the old school, 507; Medical Association, finances of, 231; Medical Association, presidency of, 103; medical directory, 174, 445; *Medicine*, New Series, 1; Pharmacologic Society, 49, 54, 361, 419; Physicians, Association of, 102; school of tropical medicine, 298.
Anastomosis—end-to-end, simple method of stretching the intestine to facilitate, 490; lateral, new open method for, 258
Anatomic nomenclature, 459
Anatomy of Meckel's diverticulum, 485
Anemia, pernicious, 141, 351
Anesthesia—chloroform, resuscitation by direct massage of heart, 31; combination, 46; scopolamin-morphin, comparative danger of, 546; spinal, and ocular paralysis, 174
Anesthetic, magnesium sulfate as, 353
Anesthetics, secondary dangers of, 94
Aneurysm, surgical treatment of, 322
Ankylostoma infection through the skin, 292
Announcement, premature, of medical discoveries, 293
Anomaly, of the palmaris longus, 550
Anthrax, 234
Anthropology, tropical, 452
Antirattlesnake serum in rattlesnake-bite, 310
Antitetanic serum, prophylactic value of, 303
Antitoxin—Bill vetoed, 176; cuts down deathrate, 448; in New Jersey, 102; of poisonous mushrooms, 45; peculiar symptoms following administration of, 401; tuberculosis, 58
Antituberculosis organization, 172
Antityphoid committee, report of, 175
Antivaccination in Canada, 110
Antivaccinationists, conference of, 449
Antivenemeux (Calmette) in rattlesnake-bite, 310
Aortic valves, mechanism of, 98
Aphasia, 446
Apparatus, hospital, in relation to healing of wounds, 109
Appendicitis—alleged epidemicity of, 232; work, end-results in, 22
Appendix, primary cancer of, 98
Army—canteen, 453; dental surgeons for, 568; health statistics, 234; medical bill, 47; medical department, 179; medical schools, 46
Arnold, W. F.: Case of rattlesnake-bite treated with antirattlesnake serum and with serum antivenemeux (Calmette), 310
Aromatic elixir, perils of, 294
Arrhythmia, cardiac, 446
Arterial pressure, morbidly high, 175
Arteries, sclerotic, effects of spasm in, 45
Arteriosclerosis, and tobacco, 507
Asepsis, apparent slips in, 294
Aseptic—fever after operations, 98; money, 100
Ashmead, Albert S.: "Mountain winds" in the healing of wounds, 245
Asphyxia, rhythmical traction on the tongue in, 354
Association—convention, largest in history, 117; National, for Study and Prevention of Tuberculosis, 120; of American Physicians, 57, 102
Asylum, insane, scandals, 230
Ataxia, locomotor, 521
Athlete, boyish, death of, 302
Athletic—overstrain and acute dilation, 363; systematic training of enlisted men in, 568
Australia, medical ethics in, 295
Automobile—as disease producer, 108; for physician, 46
Avery, Amos: Peculiar symptoms following the administration of antitoxin, 401

Babies, three, one fee, 176
Bacillus carriers, 174
Bacteria, in water, efficiency of copper foil in destroying, 207
Bacteriologist, county, 448
Baldness ascribed to improper breathing, 101
Baldy, J. M.: Pelvic massage, 121
Ballenger, Edward G.: Preparation of medicated sounds in treatment of chronic urethritis, 6
Balloch, Edward A.: End-results in appendicitis work, 22
Baltimore, milk exhibit in, 102
Barrows, Franklin H.: The patent medicine evil, 370
Bartenders, druggists as, 238
Basedow's disease, organotherapy in, 285
Baths, Nauheim, use for the failing heart of acute infectious diseases, 325
Baths—public, skin diseases in, 355; warm, in hot weather, 105
Bed, six weeks in, following certain diseases, 364
"Bends," caisson disease, or diver's palsy, 451, 507
Benedict, A. L.: Senility, 534
Beriberi or alcohol neuritis, 354
Berlin—hospital in honor of Virchow, 508; postgraduate study in, 183
Bernstein, Edward J.: Ocular symptoms in tabes dorsalis, 343
Bibliography, 442
Biedert, Charles C.: Otitis media as a complication or sequel of scarlatina, 210
Bier's treatment, state of blood during, 173
Bill—antitoxin vetoed, 176; army medical, 47; "patent medicine," 276; patent medicine, New York's, 102; pure food, 6, 234

Birth-rate—England's low, 234; France's diminishing, 512
Biology, experimental, Society for, 33, 152, 552
Biographic statement, 439
Birchmore, Woodbridge Hall: Treatment of pneumonia, 335
Bladder, chronic distention, 74
Blood—cell, red, shape of, 349; clot, extradural, in burned bodies, 290; detection of carbonic oxid in, 447; plates, 349; pressure, studies of, 325; review of literature on, 349; state of, during Bier's treatment, 173
Board—of Health, State, advice to people, 105; State licensing, must be trusted, 519; State, physicians pass, 356
Bodies—burned, extradural blood clot in, 290; burned, postmortem examinations of, 507
Body—fate of calomel in, 509; foreign, in crystalline lens, 144
Boric acid, alleged dangers of, 2
Boston, tuberculosis hospital in, 190
Boys, school, do not sleep enough, 4
Brain abscess, following acute otitis media, 382
Brav, Aaron: Acute glaucoma following the instillation of several drops of adrenalin in a cataractous eye, 204
Breast—cancer of, treatment, 161, 271; feeding, 232
Breathing, improper, baldness ascribed to, 101
Brewer, Isaac W.: Notes on the vital statistics of the Philippine census of 1903, 404
British—and American Medical Associations, comparison of recent meetings of, 445; Medical Congress, 448
Brown, Philip King: Use of Nauheim baths for failing heart of acute infectious diseases, especially in pneumonia; with studies of the blood-pressure, 325
Brown, S. H.: Review of recent literature in dermatology, 287, 560
Brush, clothes, 99
Büchler, A. F.: Multiple chancre, 270
Buhlig, Walter H.: The efficiency of copper foil in destroying certain bacteria in water, 207
Bursae, tuberculosis of, 13
Business—course, 361; milk, small profits in, 520
Butler, George F.: Professional errors and professional tolerance, 402

Caisson disease and medical certificates, 507
Caldwell, C. E.: Penetrating wounds of the abdomen, with report of cases, including a case of traumatic rupture of congenital cystic kidney, 193
California, plague in, 102
Calmette serum in treatment of rattlesnake-bite, 310
Calomel, fate of, in the body, 509
Calculus, renal, 74
Campaign sickness, prevention of, 179
Canada—antivaccination in, 110; Ministry of Health for, 171
Cancer (see also Carcinoma)—cures, 99; experimental, and immunity, 290; in negroes, 131; of breast, treatment 161, 271; of uterus, radical operation for, 98; prevention of, 564; primary, of appendix, 98; problem, fresh view of, 565; radium treatment of, 28; skin and excessive light, 452
Cancerous disease in colored races, 131
Cannaday, John Egerton: Iodin, and some of its uses in surgical work, 466
Cans for food, 98
Canteen, army, 453
Carbonic oxid, detection in blood, 447
Carcinoma of breast, postoperative röntgen treatment, 161
Cardiac—arrhythmia and heart block, 446; therapy, use of Cloetta's soluble digitoxin in, 228
Carriers, bacillus, 174
Casts in urine, clinical significance of, 173
Cat, the pathologic, 290
Catgut, sterilization of, 99
Catheter, gauge, uniform, 294
Cavities, nasal, meningococci in, 172
Cavity, pleural, rupture of esophagus into, 340
Cell, red blood, shape of, 349
Cerebrospinal fluid in tertiary period of syphilis, 169
Cesarean section, vaginal, for eclampsia, 478
Chancre, multiple, 270
Chapin, John B.: Provision for the insane poor of the city of Philadelphia, 221
Chapin's method, 358
Charity, New York's need for, 234
Chauffeurs, medical examination of, 46
Chemistry of tumors, 172
Chicago—capital crimes in, 448; medical social settlement for, 176; mortality rate reduced, 102
Children—defective, marital consanguinity and, 352; latent tuberculosis in, 172; nursing, sodium citrate in milk mixtures, 172; school, amelioration of condition of, 291; school, defective vision of, 52; school, fatigue in, 175; school, mental health of, 229; school, treatment of ringworm in, 173
Chinese, opium habit among, 3
Chlorid, sodium, therapeutics of, 224
Chloroform anesthesia, resuscitation by means of direct massage of heart for syncope after, 31
Cholecystitis, 261
Cholera—in Philippines, 192; vaccine checks disease, 276
Choroid—multiple rupture of, 162; sarcoma of, 341
Choroiditis of owls, 458
Christian science—Christian imitation of, 513; temple, 181
Chronologic statement, 439
Churchman, John W.: Surgery of the lung, 557; Treatment of joint tuberculosis, 53
Cigaret smoking in Great Britain, 293
Cincinnati, typhoid fever in, 243
City, deathrate in, 230
Clearing-house, literary, 300
Clements, Joseph: The side-chain theory of Ehrlich: Is it tenable? 278
Clergymen, cheap insurance for, 53
Clinical significance of casts in urine, 173
Clinics, small, advantage of, 298; Vienna, 306
Cloetta's soluble digitoxin (digalen) used in cardiac therapy, 228
Clot, blood, extradural in burned bodies, 290
Cocain in India, 512
Coeducation, 244
Cohen, Solomon Solis: Function of the true pharmacist, 220
Coinage, decimal, early adoption of, 516
College, small, 297, 521
Colleges—medical, endowment of, 567; there should be many well endowed, 298
Colonies for epileptics, 444
Colon irrigation in nephritis, value of, 463
Colored races, cancerous diseases in, 131
Commission to study heredity, 301
Committee, antityphoid, report of, 175
Congress—British Medical, 448; German Surgical, 48; International, on tuberculosis, 567; on quackery, 231
Conquer, let us stoop to, 354
Consanguinity, marital, and defective children, 352
Consumption, heart in, 108
Consumptives, tent sanatorium for, 65; type of heart in, 108
Convalescent, care for six weeks following certain diseases, 364
Convention, Geneva, 241, 242
Cooperation among the German universities, 175
Coplin, W. M. L.: Municipal control of tuberculosis, 216; The influence of municipal authority in suppressing venereal disease, 276
Copper—foil, efficiency in destroying certain bacteria in water, 207; salts, larvicidal value of, 556
Coroners, nonmedical, 510
Correlation in medical teaching, 191
Count, leukocyte, differential, surgical value of, 230

Country, deathrate in, 230
Course, business, 361
Cowardice, senseless, 354
Craig, Charles F.: Action of quinin upon the tertian, quartan and estivoautumnal malarial plasmodia, 7. 59
Craze, medical, duration of, 514
Creditors, some of the Nation's, 354
Crime—capital, in Chicago, 448; "city of," 508; to prevent in young, 449
Criminal cases, expert testimony in, 291
Criminals, less than one-half are degenerate, 457
Criminology in the curriculum of legal education, 99
Crusade—against uncleanliness, 450; pure food, 2
Cryoscopic examinations, clinical value of, 508
Cuba—sanitary aspect of the reoccupation of, 446; yellow fever in, 192, 567
"Cullen, Sir Patrick," 518
Cumstom, Charles Greene: Cerebrospinal fluid in tertiary period of syphilis, 169; Critical review of the technic of perineal prostatectomy and mortality, 281; End attained by renal decapsulation in chronic nephritis, 169
Curie, Professor, recent death of, 52
Currents—alternating, pernicious effects of those of high voltage, 255; electric, industrial, and the eye, 447
Curriculum—college, physical education as part of, 100; of legal education, criminology in, 99

Dairy, contamination of milk at, 16
Dangers of catchy names, 448
Dead, apparently, resuscitation of, 455
Deaf, danger signal for, 101
Death—of Dr. Fritz Schaudinn, 360; of Professor Curie, 52; sudden, resuscitation by direct massage of heart, 31; tests for, 455
Deathrate—antitoxin cuts down, 448; in San Francisco, due to recent fire, 356; in the city and country, 230
Deaths—due to good sanitation at Panama, 359; on railroads, 356
Decapsulation, renal, in chronic nephritis, 169
DeCastro, Luis: Infant mortality, 366
Degenerate—less than half our criminals are, 457; problem of, 354; the word, 457
Degeneration a modification of the protoplasm of developing organism, 458
Degrees, honorary, the hunts of the seekers and of the givers of, 50
Dendrites and disease, 353
Denison, Charles: Some of the limitations of the eradication of tuberculosis, 200
Dental surgeons for the army, 568
Department, the advertising, 53
Derangement, mental, operation in relation to, 295
Dermatology, 287, 560
Desert thirst as a disease, 51
Desmoid reaction in gastric disease, 564
Diabetes, nervous system in relation to, 173
Diagnosis—bacteriologic of syphilis, 99; new method in tuberculosis, 231; of incipient tuberculosis, 126, 471; of rabies, 565
Diet—as a therapeutic agent, 47; salt-free, in scarlatina, 231
Dietetics, neglected element in, 175
Digitoxin (digalen) Cloetta's soluble, in cardiac therapy, 228
Dilation, acute, and athletic overstrain, 363; uterine, danger of traumatism, 548
Dionin, after removal of lens in high myopia, 394
Directory, medical, American, 174
Disaster at San Francisco, 5
Discoveries, medical, premature announcement of, 293
Disease—and dendrites, 353; bacterial, treatment by bacterial vaccines, 508; caisson, 451, 507; chronic, question of hospital for, 47; desert thirst as, 51; eponymic, and symptoms in medicine, 507; gastric, desmoid reaction in, 564; infectious, directly acquired from living man, 358; producer, automobile as, 108; pure water and, 234; relation of insects to, 46; saloon as disseminator of, 446; venereal, municipal authority in suppressing, 276; venereal, society for combating, 366
Diseases—acute infectious, Nauheim baths for failing heart, 325; comparative frequency of, at home and abroad, 290; contagious, and the trained nurse, 355; skin, in public baths, 355; suits against municipalities for those due to bad sanitation, 243; venereal, prostitution, and alcohol, 1
Disinfect when there is reason, for, 358
Disinfectant, intestinal, chimera of, 48
Disinfection—against tuberculosis, 101; fetich of, 357; hand, 6; intestinal, 565; ordinary, worthlessness of, 358
Dispensary—and the medical care of the indigent, 368; evil, 179; treatment for tuberculous working people, 172
Dispensing, fatal mistakes in, 450
Diver's palsy, 451, 507
Divorce, tuberculosis cause for, 176
Doctor—American, of the old school, 507; minor, 448; noncombatant, 241
Doctors—are drumming up trade, 363; San Francisco, fund for, 102; vacation, 174
Dosage, remarkable, 245
Dowie, delusions of, 181
Dramatist, medical, great, 290
Drinking, decrease among physicians, 353
Drinks, oxygenated, 448
Drowning, incomplete, pulmonary gangrene after, 233
Drug—habits, 295; manufacturer, 361; question, public interest in, 237; store, physicians' cooperative, 511
Druggists as bartenders and physicians as saloonkeepers, 238
Drugs—pure, in Australia, 490; standardization of, physiologic, 564
Dullard, education of, in the public school, 293
Dust removal, not dust dispersal, 230
Dynamics of living matter, 454

Earthquakes, quacks, eddyism, and a visit to Our Lady of Lourdes, 452
Eclampsia—modern ideas concerning, 172; vaginal Cesarean section for, 478
Economic importance of pure science, 181
Eddyism—as a means of cure, 452 cult of, has become graft, 513
Education—legal, criminology in curriculum of, 99; of the dullard in the public school, 293; physical, part of college curriculum, 100; preliminary, of medical student, 100
Effusions, inaspirable pleural, 232
Ehrlich, side-chain theory of, 278
Electric current, industrial, and the eye, 447
Electricity, static, in general practice, 145
Elixir, aromatic, perils of, 294
Ellis, Aller G.: The Association of American Physicians, 57; National Association for Study and Prevention of Tuberculosis, 120; Prevention of postoperative adhesions: An experimental study, 481; Review of some recent literature on the blood, 349
Embryology and senility, 47
Employments, sedentary, longevity in, 303
Endoaneurysmorrhaphy, Matas, 322
England's low birth-rate, 234
Enteric fever and typhoid infection of gallbladder, 275
Enteroptosis, relief of, 385
Eosinophilia, 351
Epidemic, appendicitis, 232
Epileptic, state, low temperature following, 399
Epileptics, colonies for, 100, 444
Errors, professional, 402
Esophagus, rupture of, into pleural cavity, 340

Estimation, public, "the profession" in, 567
Ether—day at the Massachusetts General Hospital, 508; trichlorethidene propenyl, anhydrous, experiments with, 437; trichlorethidene propenyl, chemistry of, 431; trichlorethidene propenyl, investigation of, 421; trichlorethidene propenyl, physiologic action of, 426; trichlorethidene propenyl, physiological action on the blood, 429; trichlorethidene propenyl, Somnos brand of, 434; trichlorethidene propenyl, therapeutic properties of, 421
Ethical, controlled, therapeutic agents should be, 49
Ethics—and organization, knowledge of, 361; medical, in Australia, 295; principles of, 98
Etiologic factor in malaria, 174
Eugenics, popular interest in, 301
Eustachian inflation, persistent tinnitus aurium cured by, 489
Evil—dispensary, 179; patent medicine, 370; smoke, 47
Examinations—cryoscopic, clinical value of, 508; exemption from, 233; insurance, fee, 456, 565; medical, life insurance without, 456; postmortem, of burned bodies, 507; standard, are impractical, 519
Exercise—influence on gastric digestion, 249; moderate, and outdoor air, 232; strenuous, effect on heart and kidney, 507
Exophthalmic goiter, 164
Experiments—food, deceptive, 3; physiologic, 463
Eye—cataractous, acute glaucoma following adrenalin, 204; the industrial electric current and, 447
Eyestrain, resection of infraorbital and supraorbital nerves for, 71

Fact, an amazing, 299
Families, English, limitation of, 566
Famine, cascara, 448
Fanaticism and the sense of humor, 566
Fat—necrosis, abdominal, 566; subcutaneous injections of, 353
Fatalities, football, 445
Fatigue in school children, 175
Fees—for insurance examinations, 98, 456, 565; medical, 447; one, for three babies, 176
Feeding—breast, 232; infant, recent ideas in, 501
Fetish of disinfection, 357
Fever—aseptic, 98; enteric, with typhoid infection of gallbladder, 275; puerperal, and the monument to Semmelweiss, 565; scarlet, 312; variable temperature, therapy of, 229; yellow, 175; yellow, New Orleans campaign against, 293
Filipinos, leprosy among, 176
Finances of the American Medical Association, 231
Fines for doctored meat, 233
Firearms, modern, are too humane, 240
Flat residence and insanity, 564
Fluid, cerebrospinal, in tertiary period of syphilis, 169
Fog and tuberculosis, 310
Food—cans for, 98; deficient, heart failure as result of, 107; experiments, deceptive, 3; fruit as, 509; law, pure, 230; question of, 232; scandals in Great Britain, 353; prepared, inspection of, 180
Football—fatalities, 445; pathology, improvement in, 565
Ford, Joseph Herbert: Larvicidal value of copper and copper salts, 556
Foreign body in crystalline lens, 144
Fourth, glorious, cost of, 233
Friedenwald, Julius: On the influence of rest, exercise, and sleep on gastric digestion, 249
Fruit—as a food, 509; decayed, canning of, 180
Fund—emergency, for British medical profession, 512; relief, of a great city, 509
Future, therapy of, 523

Gallbladder, typhoid infection complicating enteric fever, 275
Gangrene, pulmonary, after incomplete drowning, 233
Garcelon, Alonzo, Ex-Governor, 568
Gasoline in sewers, 98
Gastric disease, desmoid reaction, 564
Gauge, uniform for catheters, 294
Geneva convention, 241, 242
Germ, leprosy, in insects, 102
German—Hospital chosen for treasury department patients, 234; society for combating venereal disease, 366; Surgical Congress, 48; universities, cooperation in, 175
Gibbon, John H.: Case of renal calculus with maggots within the stone: A case of cystic kidney with obliterated ureter associated with a fibroid uterus causing a chronic distention of the bladder with retention of urine, 74
Gies, William J.: Society for Experimental Biology and Medicine, 33. 152, 552
Girdle, pelvic, for ptosis of the abdominal viscera, 385
Githens, Thos. Stotesbury: Diseases of the kidneys, 504
Glands, mammary, hypertrophy during pregnancy, 232
Glasses, ill-fitting, professional and successful life wrecked by, 476
Glaucoma, acute, following the instillation of several drops of adrenalin in a cataractous eye, 204
Glendon, Walter P.: Static electricity in general practice, 145
Goepp, R. Max: Formic acid salts, 93
Goiter—endotracheal, 509; exophthalmic, 164; exophthalmic, serum treatment of, 415
Goodhue, E. S.: School of tropical medicine for Hawaii, 83
Gordon, Alfred: An unusual case of tic, 342; Hysteric hemiplegia, 31
Gould, George M.: A professional and successful life wrecked by ill-fitting glasses, 476; Resection of the infraorbital and supraorbital nerves for eyestrain, 71
Gout, unusual localizations, 174
Government and public health, 235
Great Britain—cigaret smoking in, 293; food scandals in, 353; new alien act in, 46
Graduate—female medical, in Switzerland, 176; medical, prospects of, 100
Graft, gigantic, cult of Eddyism has become, 513
Growth, rate of, 47

Habits, drug, 295
Hahn, Bernard: Intravenous injections. A therapy of the future, 523
Halsted, Thomas H.: Brain abscess following acute otitis media. Operation. Recovery, 382
Hand disinfection, 6
Hansell, Howard F.: Bilateral removal of the lens in high myopia: The subsequent use of dionin, 394; Foreign body in crystalline lens, extracted by the electric magnet, 144
Harris, H. F.: Two cases of tropical aphtha (sprue), 198
Harvard Medical School, 101, 445
Hawes, John B.: The serum treatment in exophthalmic goiter, 415
Hayes, N.: Hand disinfection, 6
Health—mental, of school-children, 229; Ministry of, 171; national department of, 445; New York department of, 234; public, and government, 235; society, national, proposed, 355
Heart—block and cardiac arrhythmia, 446; consumptive type of, 108; effect of strenuous exercise on, 507; failing, use of Nauheim baths for, 325; failure as result of deficient food, 107; irritable, of soldiers, 363; moderator band in, 508; undersized, 108
Heiser, Victor G.: Immigration, 89
Hemiplegia, hysteric, 31
Heredity, commission to study, 301
History, medical, 352
Homeopathy and the Massachusetts Medical Society, 231
Honolulu, school of tropical medicine for, 83
Horrors, packing house, 104
Hospitals—apathy of Londoners regarding, 99; apparatus in relation to healing of wounds, 109; Berlin, in honor of Virchow, 508; ether day at the Massachusetts General, 508; for insane, pathologists in,

445; for tuberculous in Boston, 190; German, chosen for treasury department patients, 234; milk and alcohol in, 444; public, women resident physicians in, 101; San Juan De Dios, report of, 460
House—packing, horrors, 104; packing, tuberculous employes in, 105; slaughter, under ban, 176, 233; tropical, should be well shaded, 359
Howley, N. M.: Sarcoma of the choroid, 341
Huber, John B.: Diagnosis of incipient tuberculosis, 471
Human infections, 355
Humanities and medicine, 446
Hutchinson, Woods: Tent sanatorium for consumptives, 65
Hunts of the seekers and of the givers of honorary degrees, 50
Hydrophobia, neurofibrillar changes in, 141
Hydrotherapy, 353
Hyperesthesia, painful, after typhoid fever, 294
Hypertrophy—chronic tonsillar, 173; of mammary glands during pregnancy, cause of, 232
Hypnotics, review of, 421
Hysteria, ocular complications of, 376

Ibsen in psychiatry, 510
Ice—high-priced, cause of typhoid, 233; municipal ownership of plants, 295
Illinois standard of requirements, 233
Immigration, 89, 304
Immunity—and tuberculosis, 98; experimental cancer and, 290
Incision, mastoid, 397
Independence, too much, 177
Index Medicus, 518
India—cocain in, 512; plague in, 102
Indiana medical colleges, 449
Indigent, dispensary for the medical care of, 368
Inebriates, treatment of, 101
Inebriety, scientific study of, 453
Infants—feeding, recent ideas in, 501; mortality, 366; mortality statistics for New York, 234; nursing, sodium citrate as an addition to milk mixtures for, 172; overlying of, 489
Infections—ankylostoma, through the skin, 292; human, 355; meningococcus, 290
Injections—intravenous, 523; subcutaneous, of fat, 353
Injuries and tetanus, Fourth of July, 352
Injury, severe, to left orbital region, 391
Inoculation—self, for sleeping-sickness, 102; therapeutic, treatment of bacterial disease by, 508; through mixing test-tubes, 567
Insane—asylum scandals, 230; in New York, State care of, 150; men, women nurses for, 566; pathologists in hospitals for, 445; poor, provision for, 221
Insanity—alleged increase of, 507; flat residence and, 564; report of the Massachusetts State Board of, 231
Insects—leprosy germ in, 102; relation to disease, 46
Inspection—milk, 565; of prepared foods, 180
Inspectors, meat, few pass, 356
Instincts, man's unfit him for life in crowds, 178
Instruction in operative medicine, 364
Insurance—cheap, for clergymen, 53; examination, fee, 456, 565; indiscriminate, objections to, 457; life, without medical examination, 456
Interests, financial, of manufacturer, 49
Internal medicine, 103
International society of tropical medicine, 174
Intestinal disinfection—565; chimera of, 48
Intestine—simple method to put on stretch, 490; surgically considered with special reference to sterilization, 258; tuberculosis, pulmonary, originating in, 564
Investigations—of living matter, 454; system of collective, 442
Investigators, specialization of, 458
Iodin—and some of its uses in surgical work, 466; reaction of the leukocytes, 351
Irrigation, value of rectal and colon, in nephritis, 463
Isham, Mary Keyt: Timidity, 24, 78

Jacobson, Arthur C.: A retrospect: Being a study of medical manuscript found in the ruins of New York, in 5086, A. D., 492
Japanese woman as professor of medicine, 176
Johnson, C. Radcliffe: The Episcopal dispensary and the medical care of the indigent, 368
Journals—medical, independent, 177; yellow, in medicine, 362
Jungle, the, 304

Kala-azar, 98
Kemp, Robert Coleman: Value of rectal and colon irrigation in nephritis. Some physiologic experiments, 463
Kidney—cystic, 74, 193, 291; diseases of, 504; effects of strenuous exercise on, 507; movable, 407
Kieffer, Major Charles F.: Relation between tonsillitis and acute articular rheumatism; with particular reference to the prophylaxis of postanginal rheumatism, 318
Kindergarten, 509
King, Willis P.: The origin of syphilis. Tertiary syphilis, so-called, not syphilis, 246
Knowledge, faculty of acquiring, 48
Kohn, Bernard: Hypertrophic stenosis of pylorus, 95; Some recent ideas in infant feeding, 501; The use of Cloetta's soluble digitoxin (digalen) in cardiac therapy, 228

Labor following nephrectomy, 77
Lactation, and pregnancy, influence of tobacco on, 294
Landry's paralysis and paralytic rabies, 447
Lane lectures on tropical medicine, 300
Langdon, H. H.: The pure food bill, 6
Lankester, Professor E. Roy, forced retirement of, 357; presidential address, 358
Law, pure food, 230, 356
Lectures, Lane, on tropical diseases, 300
Lens—crystalline, bilateral removal, in high myopia, 394; crystalline, foreign body in, 144
Leonard, Charles Lester: Postoperative röntgen treatment in carcinoma of the breast, 161
Leper—colony holds election, 285; foreign born, and their treatment, 291; politicians, 512
Leprosy—among Filipinos, 176; fear of, 353; germ in insects, 102; national control of, 507; transmission of, 173
Leukemia, 350
Leukocytes—differential, count, surgical value of, 230; iodin reaction of, 351;
Libraries, medical, 172, 291
Licensure, medical—519; in New York, 565; reciprocity in, 233, 293, 450
Life—insurance examiner and the agent, 444; insurance examinaations, features which demand correction, 352; insurance examination fees, 98; insurance without a medical examination, 456; multicellular organism of, 455; profession and successful, wrecked by ill-fitting glasses, 476
Light, excessive, as cause of skin cancers, 453
Limbs, regeneration of, 98
Limitations, age, of sport, 566
Lippert, William H.: The physiologic action of trichlorethidene propenyl ether on the blood, 429
Literature, medical, opera bouffe, 516
Liver—cystic, 291; tongue-like accessory lobes of , 273
Locomotor ataxia, 521
Londoners, apathy regarding hospitals, 99
Longevity—European, 568; in sedentary employments, 303; of low animal organisms, 48
Lourdes, Our Lady of, visit to, as a means of cure, 452
Lowell lecture on medical subjects, 508

Lozano, Ricardo: Surgical treatment of aneurysm by the intrasaccular method of suture (endoaneurysmorrhaphy) Matas, 322
Luhan, Joseph F. Chmelicek: Scarlet fever, 312
Lumbago treatment, 174
Lung, surgery of, 557

Macfarlane, Catharine: Results of radium treatment of cancer, 28
MacMonagle, Beverly; Treatment of cancer of breast, 271
Magnesium sulfate as an anesthetic, 353
Magnet, electric, for extraction of foreign body in crystalline lens, 144
Malaria—deaths from, 356; etiologic factor in, 174; plasmodia, action of quinin upon, 7, 59
Malay — psychology of, 177, 191; traumatic rupture of an enlarged spleen in, 400
Mammary glands, hypertrophy during pregnancy, 232
Man—his instincts unfit him for life in crowds, 178; infectious disease directly acquired from, 358; medical, pioneer, 446
Manufacturer—drug, 361; financial interests of, 49
Manuscript, medical, study of, 492
Marital consanguinity and defective children, 352
Marriage—and tuberculosis, 294; between rich and poor, 294
Martinet, anachronistic, 509
Massachusetts—Medical Society and homeopathy, 231; State Board of Insanity, report of, 231
Massage—direct, of heart, resuscitation by means of, 31; pelvic, 121
Mastoid operation, 265, 397
Matas, intrasaccular method of suture (endoaneurysmorrhaphy), 322
Materia medica—newer, working-bulletin system for investigation and classification of, 419; recent additions to, 99; products, controled, 49, 54
Matter, living, dynamics of, 454
Measles—isolation of, 102; studies in, 139
Measures, metric, in scientific work, 515
Meats — canned, military importance of, 104; doctored, fines for, 233; inspectors, few pass, 356
Mechanism of aortic valves, 98
Meckel's diverticulum, anatomy and surgery of, 485
Medical—advice, bad, to the public, 363; care of the indigent, dispensary for, 368; certificates, caisson diseases and, 507; colleges, small, 297; craze, duration of, 514; department, army, 179; director, relation to medical examiner, 352; directory, American, 174; discoveries, premature announcement of, 293; dramatist, great, 290; ethics in Australia, 295; examiner, relation to medical director, 352; expert question, suggested solution of, 510; fees, 447; graduates, female, in Switzerland, 176; graduate, prospects of, 100; history, 352; inspection of, public schools, 231; inspection of schools in the Transvaal, 53; journals, independent, 177; libraries, 172, 291; licensure, reciprocity, 100, 293, 450, 519; literature, opera bouffe, 516; man, pioneer, 446; manuscript, study of, 492; men, dramatist after, 517; men, number in the world, 511; officers, in army, status of, 241; postgraduate, study in Berlin, some practical hints regarding, 183; prejudice, flattering, for selfish reasons, 517; profession, organization in America, 173; profession, to the, 442; profession, vital interest in sanitary defects, 304; research, Rockefeller Institute for, 458; reviews, 300; school, the army, 46; social settlement in Chicago, 176; subjects, Lowell lecture on, 508; teaching, correlation in, 191; teaching, to increase efficiency of, 291; term, unsatisfactory, 292
Meeting, the Boston, 117
Medicine—and biology, Society, experimental study, 33, 152, 552; and humanities, 446; bill, patent, 102; dangerous, protection against, 45; delineation in, 447; eponymic diseases and symptoms in, 507; experimental, 33, 152, 552; Japanese woman professor of, 176; operative, instruction in, 364; patent, against, 176; prospective student of, 446; timing the action of, 385; tropical, American school, of, 298; tropical, international society, of, 174; tropical, Lane lectures on, 300; tropical, Porto Rican school of, 298; "yellow journalism," in, 362
Mental—derangement, operation in relation to, 295; health of school-children, 229
Meningitis, infectious, 176
Meningococcus infections, 172, 290
Menstruation and albuminuria, 233
Metabolism of water, 136
Method, Chapin's, 358
Metric system—459, 514; argument against, 240; establishment of, 50; popular crusade against, 240; real reason why it fails, 514; society for promotion of, 515
Mettler, L. Harrison: Correlation in medical teaching, 191
Metzenbaum, Myron: The Vienna clinics, 306
Michigan checks disreputable advertising, 352
Milk—and alcohol in hospitals, 444; better, in New Jersey, 176; contamination at the dairy, 17; exhibit in Baltimore, 102; inspection of, 356; mixtures, sodium citrate in, 172; price of, 292; small profits in business, 520; unclean, and tuberculosis, 99
Military — importance of canned meats for, 104; system, present, an anachronism, 242
Millener, Frederick H.; Pernicious effects of alternating currents of high voltage, 255
Mistakes, fatal, in dispensing, 450
Money, aseptic, 100
Monkeys, syphilis of, 106
Moral obligations, low sense of, 178
Moran, John F.: Two cases of vaginal Cesarean section for eclampsia with recovery, 478
Morgan, Wm. Gerry: Remarkable dosage, 245; Syphilis of stomach, 123
Morphin-scopolamin anesthesia, comparative danger of, 546
Mortality—infant, 366; maternal, in tenement-house obstetrics, 292; medical, in America, 152; perineal prostatectomy and, 281; rate, Chicago's reduced, 102
Mosquitos—extermination, 180; Pennsylvania to fight, 102
Muck-rake in tuberculosis, 122
Mulford, H. K. Co., statement by, 438
Municipal—authority, influence of, in suppressing venereal disease, 276; control of tuberculosis, 216; ownership of ice plants, 295
Municipalities, suits against, 243
Muscle, palmaris longus, anomaly, 550
Mushrooms, poisonous, toxins and antitoxins of, 45
Myopia, high, bilateral removal of lens in, 394

Names, catchy, and their dangers, 445
Nasal cavities, meningococci in, 172
National department of health, 445
Natural vs. moral law in venereal prophylaxis, 366
Nature, defacement, by nostrum advertisements, 290
Nauheim baths, use of, for failing heart of acute infectious diseases, 325
Navy, tuberculosis in, 511
Necrosis, fat, abdominal, 566
Needle, migratory, story, 564
Nephrectomy followed by pregnancy and labor. 77
Nephritis—acute, and chronic tonsillar hypertrophy, 173; chronic, renal decapsulation in, 169; value of rectal and colon irrigation in, 463
Nerves—cranial, paralysis, injury to orbital region presenting, 391; resection for eyestrain, 71
Nervous system in relation to diabetes, 173

Neurasthenia, tropic, 109
Neuritis, alcohol, or beriberi, 354
Neurofibrils, lesions in pathologic states, 141
Newberne, R. E. L.: Report on San Juan De Dios Hospital, 461
Newell, James: Reports on tongue-like accessory lobes of the liver, and achylia gastrica, 273
New Jersey—antitoxin in, 102; better milk in, 176; pace that kills in, 449
New Orleans campaign against yellow fever, 293
New series, American Medicine, 1
Newspapers and quacks, 508
New York—department of health, 234; infant mortality statistics for, 234; inspection of milk, 356; medical license law in, 565; needs for charity, 234; patent medicine bill, 102; State care of insane in, 150
Noble, Charles P.: Nephrectomy followed by pregnancy and labor, 77
Nofer, George H.: Acute pyelitis, 371
Nomenclature, anatomic, 459
Noncombatant, word, used with a sting, 241
Nonsense, humdrum, repetition of, 518
Norris, George William: Diagnosis of incipient pulmonary tuberculosis, 126
Nose in relation to sexual organs, 232
Nostrum advertisements, defacement of nature by, 290
Nurses—and hospital apparatus in relation to healing of wounds, 109; trained, and contagious diseases, 355; trained, in the schools, 565; training of, 47; women, for insane men, 566
Nutrition, excess, cause of tuberculosis, 520

Obstetrics—pulmonary tuberculosis in its relation to, 132; tenement-house, maternal mortality in, 292
Ocular—complications of hysteria, 376; paralysis, and spinal anesthesia, 174; symptoms in tabes dorsalis, 343
Officer—cabinet, pernicious advice from, 293; medical, status of, 241
Offspring, bad, death of, 302
Operation—aseptic fever after, 98; in relation to mental derangement, 295; mastoid, 265; radical, for uterine cancer, 98
Operator, röntgen-ray, death of, 453
Opium habit among the Chinese in the Philippines, 3
Orbital region, left, severe injury to, 391
Organism—animal, low, longevity of, 48; developing, degeneration is a modification of the protoplasm, 458; multicellular, life of, 455
Organization—and ethics, knowledge of, 361; antituberculosis, 172; of the medical profession in America, 173
Organotherapy—danger in, 507; in Basedow's disease, 285
Organs, sexual, nose in relation to, 232
Orient, dangers of opium in, 3
Otitis media—acute, brain abscess following, 382; as a complication or sequel of scarlatina, 210
Ovarian tumors, complications of, 46
Overeating by the poor, 291
Owens, Samuel A.: Enteric fever followed by relapse, complicated with typhoid infection of gallbladder. Recovery, 275
Owls, choroiditis of, 458

Pace that kills in New Jersey, 449
Palate, respect for, 447
Palsy, driver's, 451
Panama, deaths due to good sanitation at, 359; sanitary condition of, 510
Papers, section, advance reprints of, 230
Paraleprosy, 566
Paralysis—injury to left orbital region presenting, 391; Landry's, and paralytic rabies, 447; ocular, and spinal anesthesia, 174
Pasteurization, substitute for, 353
Patent medicines—against, 176; evil, 370; pharmacist's efforts to eliminate from his shelves, 355; traffic in England, amount of, 568
Pathologic states, lesions of neurofibrils in, 141
Pathologists in hospitals for the insane, 445
Pathology—cat in relation to, 290; football, improvement in, 565
Pauperization of the afflicted, 178
Pedestrian Weston, advanced age of, 302
Pelvic massage, 121
Pennsylvania to fight mosquitos, 102
Pensions and preventions, 243
People, State Board of Health advice to, 105
Peril, the venereal, 186, 462
Perineal prostatectomy and mortality, technic of, 281
Pernicious anemia, 351
Personality, physician's, market value of, 353
Pertussis, microbe of, 491
Pessary, retroversion, 355
Peterson, Frederick: State care of insane in New York, 150
Pharmaceutical reform, blow to, 173
Pharmacist, true, function of, 220
Pharmacologic Society, The American, 361
Pharmacopeia, reasons why physicians should support, 344
Philadelphia—health budget for 1907, 568; provision for insane poor in, 221; slaughter houses condemned, 233; strenuous quarantine in, 174; typhus in, 235
Philippines—census, vital statistics of, 404; cholera in, 192; Journal of Science, 451; opium habit among Chinese in, 3
Philosophy and psychology, relation to medicine, 446
Phlebotomy, 508
Photodynamic action, 230
Phrenology, 101
Physicians—American, Association of, 57, 102; and Red Cross as supporters of irregular nursing schools, 110; as saloonkeepers and druggists as bartenders, 238; automobile for, 46; cooperating drug store of, 511; decrease of drinking among, 353; pass State Board, 356; personality, market value of, 353; reasons why they should support the Pharmacopeia, 344; residence, city, 354; ungratuitous services to, 46; unprogressive, 301; women resident, in public hospitals, 101
Pipes, lead service, danger of, 508
Pithiatism, 232
Pittsburg, typhoid fever near, 102
Plague, 47, 102
Plasmodia, malarial, action of quinin upon, 7, 59
Plates, blood, 349
Pleural effusions, inaspirable, 232
Pneumonia — complicating pregnancy, 213; treatment of, 335; twenty-four-hour, 509; use of alcohol in, 566; use of Nauheim baths for failing heart of, 325
Pohlman, Augustus Grote: Some of the disadvantages of the upright position, 541
Poisoning, ptomaine, of travelers, 180
Policy holders, organization of, 5
Politicians, leper, 512
Polycythemia, 352
Poor, overeating by, 291
Porter, Miles F.: Making and dressing of wounds, 313
Porto Rican school of tropical medicine, 298
Porto Rico, advantages of, 299
Position, upright, disadvantages of, 541
Postgraduate study in Berlin, practical hints regarding, 183
Postoperative röntgen treatment in carcinoma of the breast, 161
Potter, Thomas H.: A simple method for putting the intestine on the stretch to facilitate end-to-end anastomosis, 490; Rupture of the esophagus into the pleural cavity, 340
Poultry, undrawn, sale of, 180
Practice, general, static electricity in, 145
Practitioner, old, must be protected, 365
Pregnancy—and lactation, influence

of tobacco on, 294; following nephrectomy, 77; following vaginal suspension of uterus, 331; hypertrophy of mammary glands during, 232; pneumonia complicating, 213
Prejudice, medical, flattery for selfish reasons, 517
Pressure, arterial, morbidly high. 175
Preventions and pensions, 243
Price, G. E.: Lesions of the neurofibrils in pathologic states, with report of neurofibrillar changes in a case of hydrophobia, and one of pernicious anemia, 141
Prize, Nobel, 568
Problem—cancer, fresh view of, 565; of the degenerate, 354
Process, forcing, in America, 107
Profession—medical, 442; medical, vital interest in sanitary defects, 304; our, right or wrong, 237; overcrowding of, 175; the, in public estimation, 567
Professional errors and professional tolerance, 402
Professor of medicine, Japanese woman as, 176
Professor's new advertising scheme, 238
Prohibition to stop smuggling, 4
Prophylactic value of antitetanic serum, 303
Prophylaxis—of postanginal rheumatism, 318; venereal, natural vs. moral law in, 366
Prostatectomy, perineal, technic of, 281
Prostitution, 1
Protection for old practitioners, 365
Proteids—chemistry of, 455; synthesis of, 454
Protoplasm of developing organism, degeneration is a modification of, 458
Psychiatry, Ibsen in, 510
Psychology—and philosophy, relation to medicine, 446; of the Malay, 177, 191
Ptomain poisoning of travelers, 180
Ptosis of abdominal viscera, pelvic girdle for, 385
Public—bad medical advice to, 363; health bulletin for Italy, 135; schools, medical inspection of, 231; traveling, menace to, 292
Publishers, change of, 173
Puerperal—eclampsia, modern ideas concerning, 172; fever and the monument to Semmelweiss, 565
Pulmonary—gangrene after incomplete drowning, 233; tuberculosis, daily temperature variations in, 292; tuberculosis, incipient, diagnosis, 126; tuberculosis in its relation to obstetrics, 132; tuberculosis, intestinal origin of, 564
Pure—food bill, 6; food bill passed, 234; food crusade, 2; food law makes work, 356; science, economic importance of, 181
Pyelitis, acute, 371
Pylorus, hypertrophic stenosis of, 95

Quackery—congress on, 231; fortunes in, 234; war against, 520
Quacks and newspapers, 508; as a means of cure, 452; surgical specialists as, 299
Quarantine—national, 100; strenuous, in Philadelphia, 174; suit over, 512
Quinin, action upon malarial plasmodia, 7, 59

Rabies—diagnosis of, 565; paralytic, and Landry's paralysis, 447
Races, colored, cancerous disease in, 131
Radasch, Henry E.: An unusual anomaly of the palmaris longus muscle, 550
Radium—and the matter of imposts, 512; treatment of cancer, 28; yield of, 512
Railroads, death on, 356
Rat-catchers to protect health in Cuba, 568
Rattlesnake-bite treated with antirattlesnake serum and with serum antivenemeux (Calmette), 310
Reaction, serum, untoward, 173
Recalcification, 98
Reciprocity—committee on, 365; in licensing, interstate, 233; in medical licensure, 293, 450; in Vermont, 12; interstate, of medical licensure, 100; recognition of, 365
Rectal irrigation in nephritis, value of, 463
Red Cross—as supporter of irregular nursing schools, 110; scandals in San Francisco, 359
Reed, A. P.: The other side, 122
Reform—pharmaceutical, blow to, 173; spelling, 353
Remedies—extrapharmacopeal, 447; new, society for the impartial investigation of, 509
Renal calculus with maggots within the stone, 74
Renal decapsulation in chronic nephritis, 169
Report—of antityphoid committee, 175; of the Massachusetts State Board of Insanity, 231; preliminary, of the staining of spirochæta pallida (treponema pallidum) in tissues of congenital syphilis, 30
Reprints, advance, of section papers, 230
Requirement, Illinois standard of, 233
Research, medical, Rockefeller Institute for, 458
Resection of infraorbital and supraorbital nerves for eyestrain, 71
Residence, flat, and insanity, 564
Rest, influence on gastric digestion, 249
Resuscitation—by means of direct massage of heart after chloroform anesthesia, 31; of those apparently dead, 455
Retirement, forced, of Professor E. Ray Lankester, 357
Reviews:
  Abrams, Albert: Man and his poisons, 245; The blues, 113
  Allbutt, Thomas Clifford: A system of medicine, 244
  Anders, James M.: Textbook of the practice of medicine, 111
  Anshutz, E. P.: The elements of homeopathic theory, materia medica, practice and pharmacy, 113
  Arneill, James Rae: The medical epitome series, clinical diagnosis and urinalysis, 182
  Benden, Ida C.: Modern English, book one, elementary lessons in English, 111
  Berg, Albert A.: Surgical diagnosis, a manual for students and practitioners, 113
  Boericke, F. A.: The elements of homeopathic theory, materia medica, practice and pharmacy, 113
  Cotton, Alfred Cleveland: New medical series: The medical diseases of infancy and childhood, 305
  Cushny, Arthur R.: A textbook of pharmacology and therapeutics, 182
  DaCosta, J. Chalmers: Anatomy, descriptive and surgical, 111
  DeLorme, M. F.: A manual of pharmacy for medical students, 112
  Douglass, Beaman: A textbook of the diseases of the ear, nose and pharynx, 112; Nasal sinus surgery with operations on nose and throat, 112
  Emerson, Henry P.: Modern English, book one, elementary lessons in English, 111
  Friedenwald, Julius: Dietetics for nurses, 115
  Gray, Henry: Anatomy, descriptive and surgical, 111
  Hare, H. A.: Progressive medicine, 305
  Heinemann, Paul G.: A laboratory guide in bacteriology, 114
  Hewes, Henry F.: Surgical aspects of digestive disorders, 183
  Jackson, Edward: Skiascopy: Its practical application to the study of refraction, 305
  Jackson, George Thomas: The ready reference handbook of diseases of the skin, 115
  Jardine, Robert: Clinical obstetrics, 111
  Kelly, A. O. J.: International clinics, 305
  Kelmer, Theorn Wendell: The physical examination of infants and young children, 114
  Kemper, G. W. H.: The world's anatomists, 305
  Kent, James Tyler: Lectures on

homeopathic materia medica, 115
Kinnicutt, Francis P.: A treatise on diagnostic methods of examinations, 182
Koplik, Henry: The diseases of infancy and childhood, 114
Landis, H. R. M.: Progressive medicine, 305
LeFevre, Egbert: Physical diagnosis, including diseases of the thoracic and abdominal organs, 224
Long, Joseph R.: The prevention and cure of tuberculosis, 114
Luke, Thomas D.: A guide to anesthetics for the student and general practitioner, 183
McCrudden, Francis H.: Uric acid, 305
Moynihan, B. G. A.: Gallstones and their surgical treatment, 113
Mracek, Franz: An atlas and epitome of diseases of the skin, 112
Mumford, James J.: Surgical aspects of digestive disorders, 183
Oppenheimer, Seymour: The surgical treatment of chronic suppuration of the middle-ear and mastoid, 112
Paul, M. Eden: An atlas of human anatomy for students and physicians, 113
Petersen, F. J.: Materia medica and therapeutics, 182
Potter, Nath'l Bowditch: A treatise on diagnostic methods of examinations' 182
Pringle, Miss A. L.: A study in nursing, 115
Robb, Isabel Hampton: Nursing: Its principles and practice for hospitals and private use, 245
Rolleston, Humphry Davy: A system of medicine, 244
Roosa, D. B. St. John: A textbook of the diseases of the ear, nose and pharynx, 112
Rosa, Prof. Alois Dalla: An atlas of human anatomy for students and physicians, 113
Ruhrah, John: Dietetics for nurses, 115
Stahl, Hermann: A treatise on diagnostic methods of examinations, 182
Stellwagon, Henry W.: An atlas and epitome of diseases of the skin, 112
Stevens, A. A.: Modern materia medica and therapeutics, 111
Stone, Arthur K.: Surgical aspects of digestive disorders, 183
Studies from the Rockefeller Institute for medical research, 115
Thorington, James: The ophthalmoscope and how to use it, 113
Thornton, E. Q.: Dose book and manual of prescription-writing, 114
Toldt, Carl: An atlas of human anatomy for students and physicians, 113
VonNoorden, Carl: Diseases of metabolism and nutrition, Part VI: Drink restriction, 114
Wharton, Henry R.: Minor and operative surgery, including bandaging, 112
Woodhull, Alfred A.: Personal hygiene, 305
Young, James K.: A manual and atlas of orthopedic surgery, 245
Zahorsky, John: Baby incubators, 183
Reviews, medical, 300
Rhein, J. H. W.: Exophthalmic goiter, 164; Severe injury to the left orbital region presenting paralysis of several cranial nerves, 391
Rheumatism—acute articular, relation between tonsillitis and, 318; acute articular, treatment, 364; an unsatisfactory medical term, 292; postanginal, prophylaxis of, 318
Richardson, Hubert: Metabolism of water, 136; Organotherapy in Basedow's disease, 285; Therapeutics of sodium chlorid, 224
" Ridgeon, Sir Colenso," 518
Rights, State's and people's, 105
Ringworm, treatment in school-children, 173
Rio Janeiro, fine record for, 295
Risley, Samuel D.: Severe injury to the left orbital region presenting paralysis of several cranial nerves, 391
Roberts, Walter: The mastoid incision, 397
Rockefeller Institute for Medical Research, 458
Röntgen-ray operator, death of, 453
Röntgen treatment, postoperative, in carcinoma of breast, 161
Rosenberger, Randle C.: Recent studies in measles, 139
Ross, N. B.: Case of unusually low temperature following status epilepticus, 399
Rubber, vulcanized, cause of stomatitis, 175
Rupture, multiple, of choroid, 162; traumatic, ot an enlarged spleen, 400; traumatic, of congenital cystic kidney, 193

Sadtler, Samuel P.: Chemistry of trichlorethidene propenyl ether, 431
Saloon as disseminator of disease, 446
Saloonkeepers, physicians as, 248
Salts, formic acid, 93
Sanatorium—for the tuberculous, 234; tent, for consumptives, 65; the, 509
Sanderson, S. Edward: The intestine surgically considered with special reference to its sterilization. A new open method for lateral anastomosis, 258
San Francisco—camps, typhoid fever in, 178; deaths due to recent fire, 356; disaster at, 5; doctors, fund for, 102; low sense of moral obligations in, 178; Red Cross scandals in, 359; virtue its own reward at, 230
Sangrado Redivivus, 508
Sanitary aspect of the reoccupation of Cuba, 446
Sanitation—bad, diseases due to, 243; good, deaths due to, 359; in the Isthmus of Panama, 510; victims of, 291
San Juan De Dios Hospital, report of, 460
Sarcoma of the choroid, 341
Scandal, meat, in Vermont, 511
Scarlatina—otitis media as a complication or sequel of, 210; salt-free diet in, 231
Scarlet fever, 312
Schaudinn, Dr. Fritz, death of, 360
Scheme, advertising, professor's new, 238
Schultz, Oscar T.: Preliminary report of the staining of spirochæta pallida (treponema pallidum) in tissues of a case of congenital syphilis, 30
Science—" and Health," authorship of, 513; "christian," Christian imitation of, 513; "christian," temple of, 181; is harmless to theology, 456; Philippine Journal of, 451; pure, economic importance of, 181
School—American, of tropical medicine, 298; army medical, 46; Harvard Medical, history of, 565; medical, 101; medical inspection of, 53; nursing, irregular, supporters of, 110; of tropical medicine for Honolulu, 83; Porto Rican, of tropical medicine, 298; public, education of the dullard in, 293; public, medical inspection of, 231; special, for talented, 106; trained nurses in, 565
School-children, amelioration of the condition of, 291
Scopolamin-morphin anesthesia, comparative danger of, 546
Scorem, John: The muck-rake in tuberculosis, 122
Scrutiny, self, 299
Seaman, William H.: The metric system, 459
Semmelweis, monument to, puerperal fever and, 565
Senility—534; and embryology, 47
Serum—antivenemeux (Calmette), 310; antirattlesnake, 310; antitetanic, prophylactic value of, 303; reactions, untoward, 173; treatment in exophthalmic goiter, 415
Sewers, gasoline in, 98
Sharples, C. W.: Typhoid fever; round worms; cholecystitis; hepatic abscess, 261
Shastid, Thomas Hall: Mastoid operation, 265
Sheaths, tendon, tuberculosis of, 13

Sherer, J. W.: Multiple rupture of choroid, 162
Shock, curative value of, 452
Shumway, Edward A.: A series of cases illustrating the ocular complications of hysteria, 376
Sickness, campaign, prevention of, 179
Side, the other, 122
Signal, danger, for deaf, 101
Skepticism, value of, 233
Skillern, Penn-Gaskell, Jr.: Movable kidney, 407
Skin—ankylostoma infection through, 292; cancers, excessive light as cause of, 453; diseases in public baths, 355
Slaughter-houses under ban, 176
Sleep—electric, 447; influence on gastric digestion, 249; lack of, renders study impossible, 5; school boys do not get enough, 4; proper amount of, 4
Sleeping-sickness—African, 447; prize for cure of, 511; prizes for research work on, 234; self-inoculation for, 102
Smoke evil, 47
Smoking, juvenile, 448
Smuggling, can prohibition stop?, 4
Sneezer, the shameless, 510
Society, American Pharmacologic, 49, 361
Society for experimental biology and medicine, 33, 152, 552
Sodium—chlorid, therapeutics of, 224; citrate as an addition to milk mixtures for nursing infants, 172
Soldiers, "irritable heart" of, 363
Solvents, uric acid, 98
Somnos brand of trichlorethidene propenyl ether, 434; physiologic action of, 426
Sounds, medicated, preparation in treatment of chronic urethritis, 6
Spasm, effects in sclerotic arteries, 45
Specialism, what is, 510
Specialists, honored and unhonored, 103
Specialization of teachers and investigators, 458
Specifics, paucity of, 237
Spelling reform, 353
Spinal anesthesia and ocular paralysis, 174
Spirit of fair play, 362
Spirochæta pallida, in tissues of congenital syphilis, 30
Spivak, C. D.: Pelvic girdle for ptosis of the abdominal viscera. Suggestion for its use in tuberculosis, etc., 385
Spleen, enlarged, traumatic rupture of, 400
Sport, age limitations of, 566
Sprue (tropical aphtha), 198
Staircase, standardized, 566
Standardization of drugs, physiologic, 564
State care of insane, 150
Statement—biographic and chronologic, 439; by the H. K. Mulford Co., 438; preliminary, 445
Statistics—health, of army, 234; mortality, infant, for New York, 234; vital, of Philippines, 404
Stenosis of pylorus, hypertrophic, 95
Sterility, one-child, 292
Sterilization, intestine surgically considered with reference to, 258
Sterilization of catgut, 99
Stewart, A. H.: Contamination of milk at the dairy, 17
Stewart, C. A.: Danger of traumatism to uterus during dilation, 548
Stewart, Colin C.: Physiologic action of trichlorethidene propenyl ether (Somnos), 426
Stewart, F. E.: American Pharmacologic Society and controled materia medica, 54; Biographic and chronologic statement, 439; Reasons why physicians should support the Pharmacopeia, 344
Stewart, J. Clark: Tuberculosis of bursas and tendon sheaths, 13
Stomach—contents, sources of error in examinations of, 293; effect of temperature changes on, 446; syphilis of, 123
Stomatitis due to vulcanized rubber, 175
Stone, maggots within, 74
Story, migratory needle, 564
Stirpiculture, 301
Study—experimental, 481; scientific of inebriety, 453
Student, medical, preliminary education of, 100
Students, sleepless, cannot study, 5
Study, medical, neglect of fundamental branches in, 566
Subscriptions, extension of, 53
Surgeons, dental, for army, 568
Surgery—and internal medicine, 103; of Meckel's diverticulum, 485
Surgical—value of the differential leukocyte count, 230; work, iodin, and some of its uses in, 467
Suture, intrasaccular method of, 322
Switzerland, female medical graduates in, 176
Symptoms—and eponymic diseases in medicine, 507; peculiar, following administration of antitoxin, 401
Syphilis—abortive, 566; bacteriologic diagnosis of, 99; congenital, staining of spirochæta pallida in tissues of, 30; investigation of, 176; late, contagiousness of, 507; of monkeys, 106; of stomach, 123; origin of, 246; tertiary, 246; tertiary period of, cerebrospinal fluid in, 169
System—the metric, 459, 514; metric, argument against, 240; metric, popular crusade against, 240; metric, real reason why it fails, 514; metric, society for the promotion of, 515; military, an anachronism, 242
Systemic infection, tonsil as starting point, 294
Tabes dorsalis, ocular symptoms in, 343
Talented, special schools for, 106
Teachers—and tuberculosis, 48; specialization of, 458
Teaching—medical, correlation in, 191; medical, to increase efficiency of, 291
Telephone—"terrors," 353; the, 510
Temperance, age of, 295
Temperature—changes, effect on stomach, 446; low, following status epilepticus, 399; therapy of fever, variable, 229; variations in pulmonary tuberculosis, 292
Temple, "Christian Science," 181
Tendon sheaths, tuberculosis of, 13
Tenements, tuberculosis crusade in, 511
Terrors, telephone, 353
Testimony—expert, in criminal cases, 291; medical expert, 293
Test-tubes, fatal inoculation through mixing, 567
Tetanus, Fourth of July injuries and, 352
Theology, science is harmless to, 456
Theory, side-chain, of Ehrlich, 278
Therapeutic—agent, diet as, 47; agent, controlled, should be made ethical, 49; shortcomings, alleged, 292
Therapy of the future, 523
Thienhaus, C. O.: The present status of retrodeviations of the uterus, with a report of eleven cases of pregnancy following vaginal suspension of the uterus, 331
Thirst, desert, as disease, 51
Throats, dusty, 101
Tic, unusual, 342
Timidity, 24, 000
Tinnitus aurium, persistent, cured by eustachian inflation with heated dry air, 489
Tobacco—and arteriosclerosis, 507; influence on pregnancy and lactation, 294
Tolerance, professional, 402
Tongue, rhythmical traction in asphyxia, 354
Tonsils as starting point of systemic infection, 294
Tonsillar hypertrophy, chronic, 173
Tonsillitis and acute articular rheumatism, relation between, 318
Toxins of poisonous mushrooms, 45
Trachoma investigation, prize for, 450
Traction, rhythmical, on the tongue in asphyxia, 354
Trade, doctors are drumming up, 363
Training, systematic, of enlisted men in athletics, 568
Traumatism, uterine, danger of, during dilation, 548
Treatment—Bier's, state of blood during, 173; dispensary, for tuberculous working people, 172; of foreign born lepers, 291; of lumbago, 174; of pneumonia, 335; of rattlesnake-bite, 310; of ringworm

in school-children, 173; serum, in exophthalmic goiter, 415
Treponema pallidum (spirochæta pallida) in tissues of congenital syphilis, 30
Trichlorethidene propenyl ether—421, 426, 429, 431, 437; Somnos brand of, 434
Tropical—anthropology, 452; aphtha (sprue), 198; medicine, American school of, 298; medicine, international society of, 174; medicine, Lane lectures on, 300; medicine, Porto Rican school of, 298; medicine, school of, 83; neurasthenia, 109
Tropics, houses in, should be well shaded, 359
Tuberculosis—among married couples, 294; and fog, 310; and immunity, 98; and teachers, 48; and unclean milk, 99; antitoxin, 58; board, abolish, 511; cooperation in prevention and control of, 231; crusade in tenements, 511; decrease in, 119; Delaware fights, 295; disinfection against, 101; dispensary treatment for, 172; hospital for Boston, 190; hospital for New York, 450; incipient, diagnosis of, 471; international congress on, 567; in the navy, 511; is cause for divorce, 176; joint, treatment, 43; latent, in childhood, 172; muck-rake in, 122; municipal control of, 216; National Association for Study and Prevention of, 120; new method of diagnosis, 231; nutritional excess a cause of, 520; of bursas and tendon sheaths, 13; pulmonary, daily temperature variations in, 292; pulmonary, diagnosis of incipient, 126; pulmonary, in its relation to obstetrics, 132; pulmonary, intestinal origin of, 564; sanatorium for, 234; some of the limitations of the eradication of, 200; use of pelvic girdle in, 385
Tuberculous—employes in packing houses, 105; gift for sanatorium for, 234; patients in poverty must be kept at home, 239; patient, physical type of, 239; the blond, 239
Tumors—chemistry of, 172; ovarian, complications of, 46
Type, physical, of a tuberculous patient, 239
Typhoid—caused by high priced ice, 233; epidemic of, 243; fever, 261; fever in San Francisco camps, 178; fever near Pittsburg, 102; fever, painful hyperesthesia after, 294; infected water, harmlessness of drinking, 360; infection of gallbladder, 275; in Cincinnati, 243; sequel, peculiar, 46
Typhus in Philadelphia, 235

Uncleanliness, crusade against, 450
Universities, German, cooperation in, 175
Ureter, obliterated, 75
Urethritis, chronic, preparation of medicated sounds in treatment, 6
Uric acid solvents, 98
Urine—casts in, clinical significance of, 173; retention of, 74
Uterus—cancer of, 98; danger of traumatism in dilating, 548; fibroid, 74; pregnancy following vaginal suspension of, 331; retrodeviations of, 331

Vacation, doctor's, 174
Vaccination—fight, Pennsylvania wins, 449; law on, 5
Vaccines—bacterial, treatment of bacterial disease by the therapeutic inoculation of, 508; cholera, checks disease, 276
Vagabonds, college-bred, 107
Value, surgical, of the differential leukocyte count, 230
Valves, aortic, mechanism, 98
Vanderkleed, Chas. E.: The Somnos brand of trichlorethidene propenyl ether, 434
Vanderveer, James N.: Some practical hints regarding medical postgraduate study in Berlin, 183
Vansant, E. L.: Persistent tinnitus aurium cured by eustachian inflation with heated dry air, 489
Variations, cause of, 302
Vegetables—decayed, canning of, 180; fertilizing, with human excrement, 511
Vegetarianism, 354
Venereal—diseases, 1; disease, German society for combating, 366; disease, influence of municipal authority in suppressing, 276; peril, 186, 462; prophylaxis, natural vs. moral law in, 366
Vermont has decided on reciprocity, 162
Vienna clinics, 306
Virchow, Berlin hospital in honor of, 508
Virginia State colony for epileptics, 100
Virtue its own reward at San Francisco, 230
Viscera, abdominal, pelvic girdle for ptosis of, 385
Vision, defective, of school-children, 52
Vital statistics of the Philippine census of 1903, 404
Voltage, high, pernicious effects of alternating currents of, 255

Washburn, Frank H.: Pulmonary tuberculosis in its relation to obstetrics, 132
Water—bacteria in, efficiency of copper foil in destroying, 207; metabolism of, 136; pure, and disease, 234; typhoid infected, harmlessness of drinking, 360
Weeks, six, be careful for, following certain diseases, 364
Wessinger, John A.: Pneumonia complicating pregnancy, 213
Weston, pedestrian, advanced age of, 302
Whoopingcough, germs of, 509
Wilcox, Reynold Webb: Therapeutic properties of trichlorethidene propenyl ether including a review of various hypnotics, 421
"Winds, mountain," in the healing of wounds, 245
Winslow, Randolph: Anatomy and surgery of Meckel's diverticulum, 485
Wise, P. M.: Locomotor ataxia, 521
Women—intemperate, freed, 512; nurses for insane men, 566; resident physicians in public hospitals, 101
Wood, Horatio C., Jr.: Comparative danger of scopolamin-morphin anesthesia, 546; Recent contributions to the secondary dangers of anesthetics, 94
Woodbury, Frank: Resuscitation by means of direct massage of heart in cases of syncope after chloroform anesthesia, and other causes of sudden death, 31
Woodruff, Major Chas. E.: Traumatic rupture of an enlarged spleen in a Malay, 400
Work—inspection, vigorous, 449; scientific, metric measures in, 515
Working people, tuberculous, dispensary treatment for, 172
Working-bulletin system for collective investigation and classification of the newer materia medica, 419, 421
Worms, round, 261
Wounds—early recovery from those caused by modern small-caliber rifles, 240; making and dressing, 313; "mountain winds" in the healing of, 245; nurses and hospital apparatus in relation to healing of, 109; penetrating, of abdomen, 193

Yellow fever, 175, 192, 293, 567
"Yellow journalism" in medicine, 362

6

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